



FIG. 1

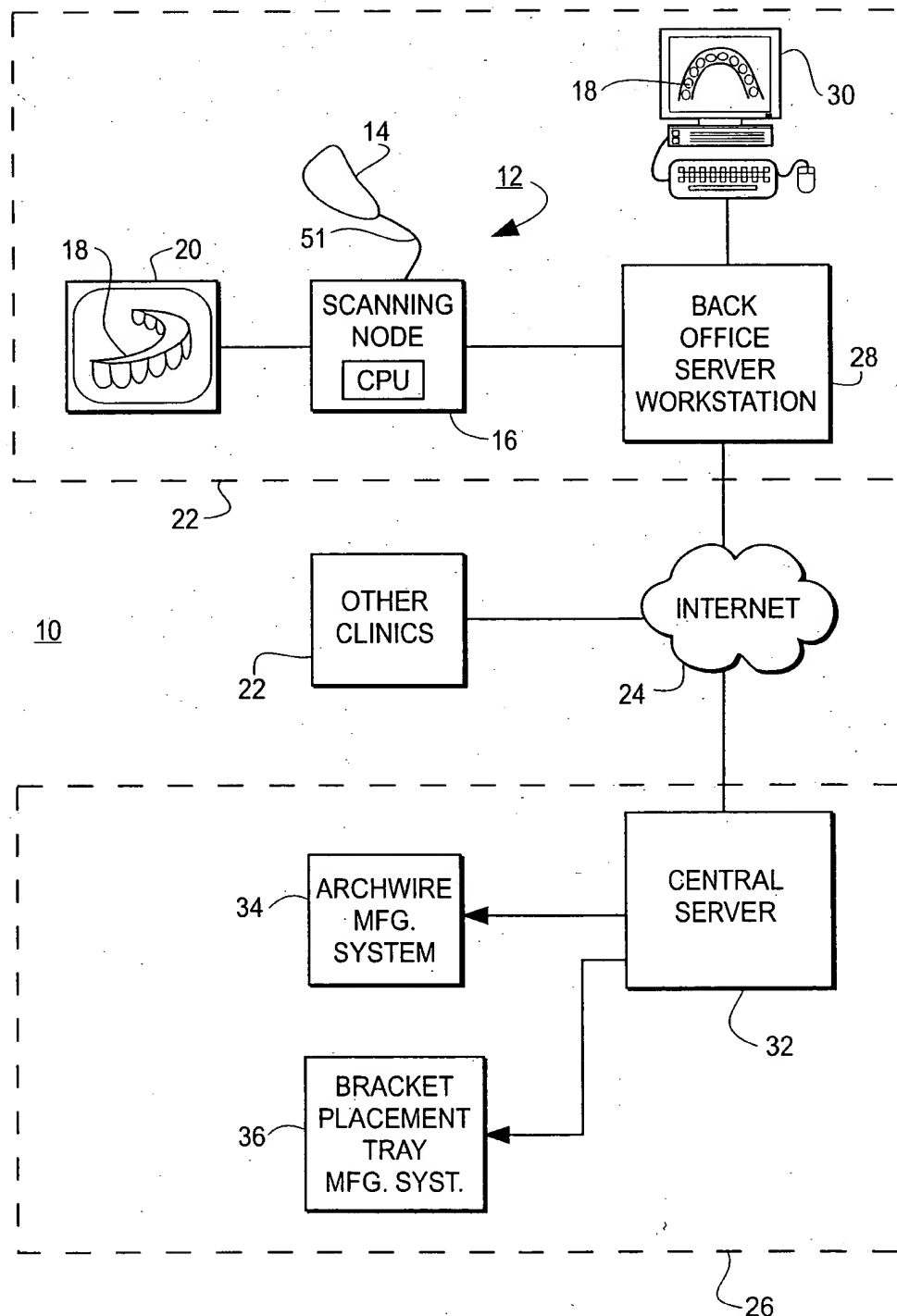
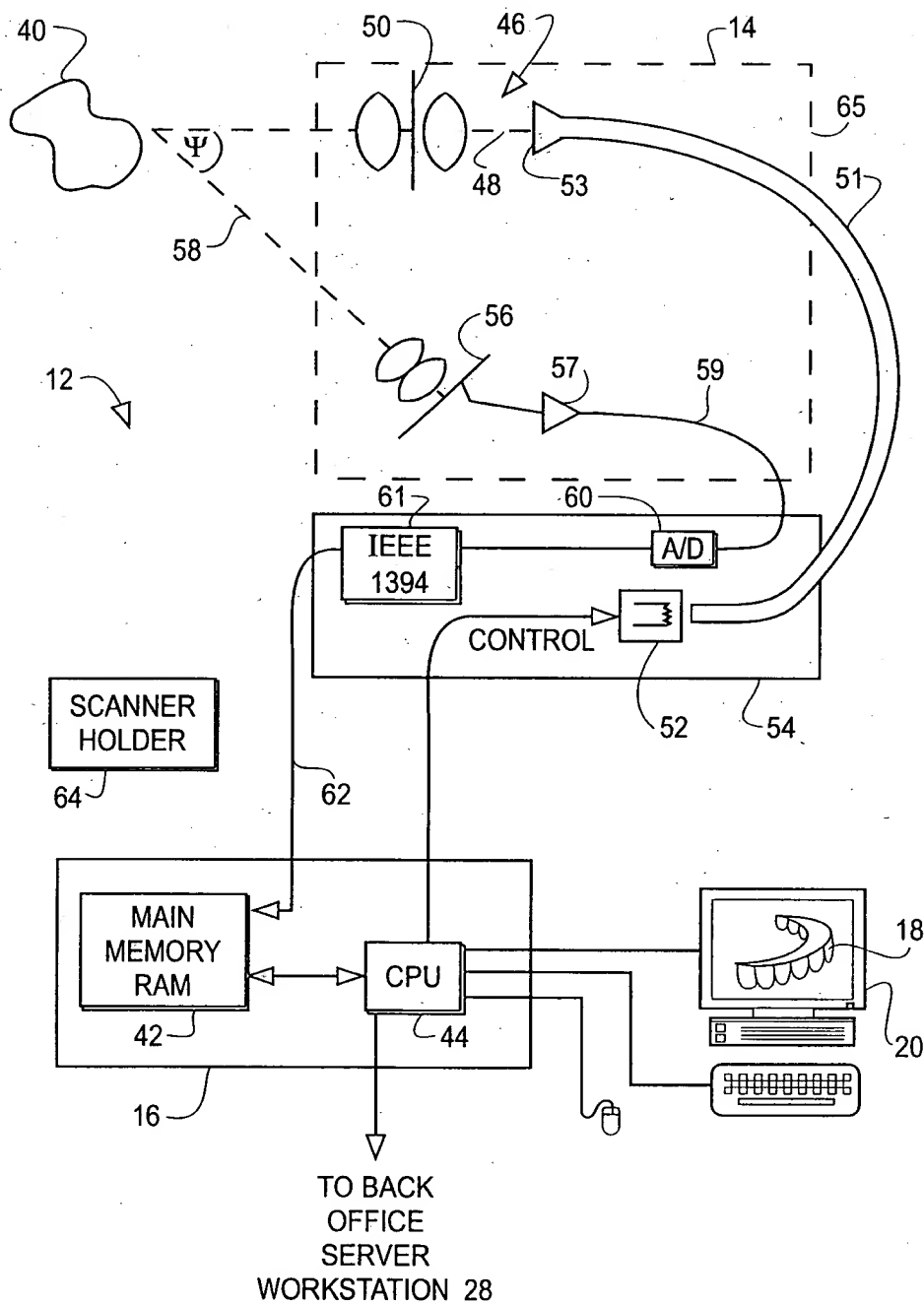
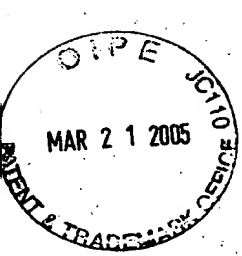


FIG. 2





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FIG. 3

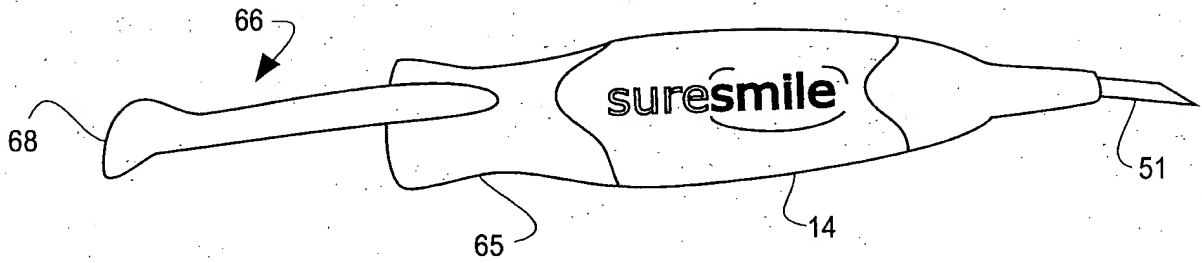


FIG. 4

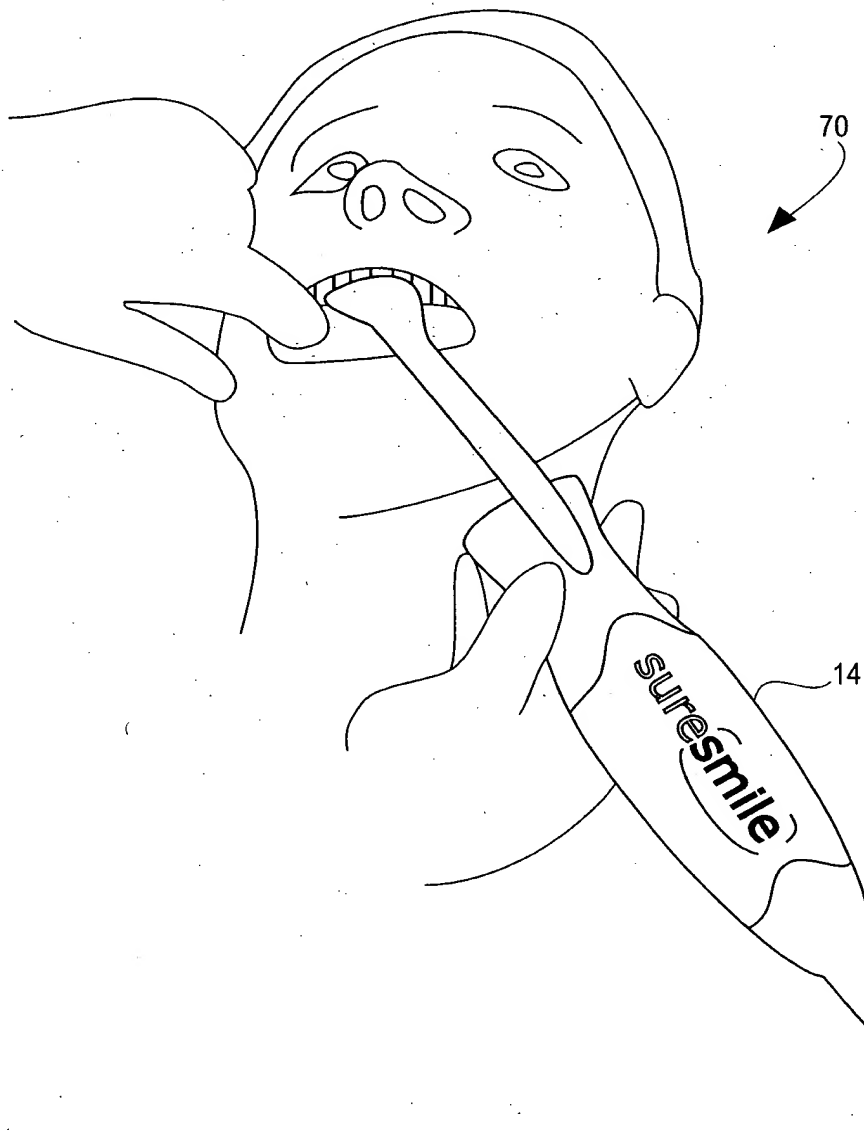
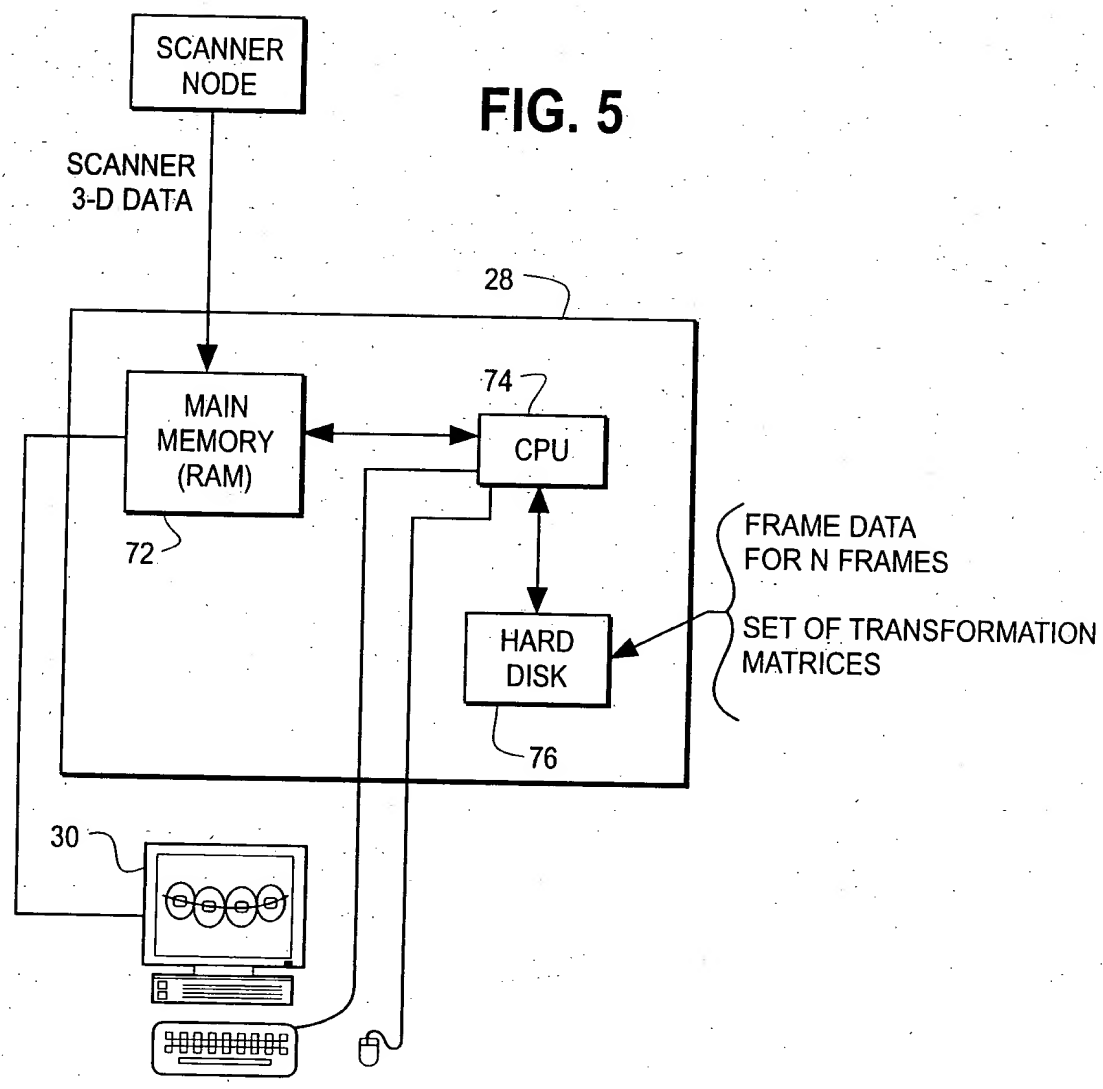
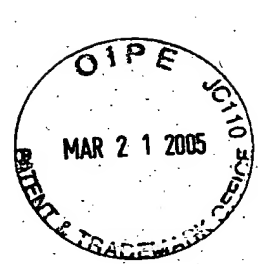


FIG. 5





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FIG. 6

3- DIMENSIONAL IMAGE CAPTURE (PER FRAME)

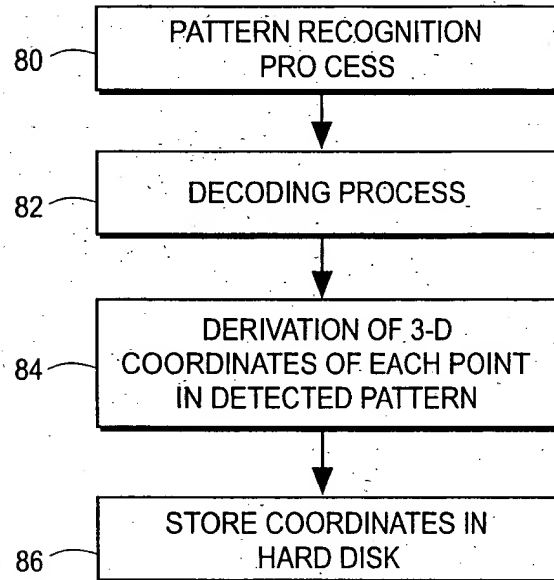
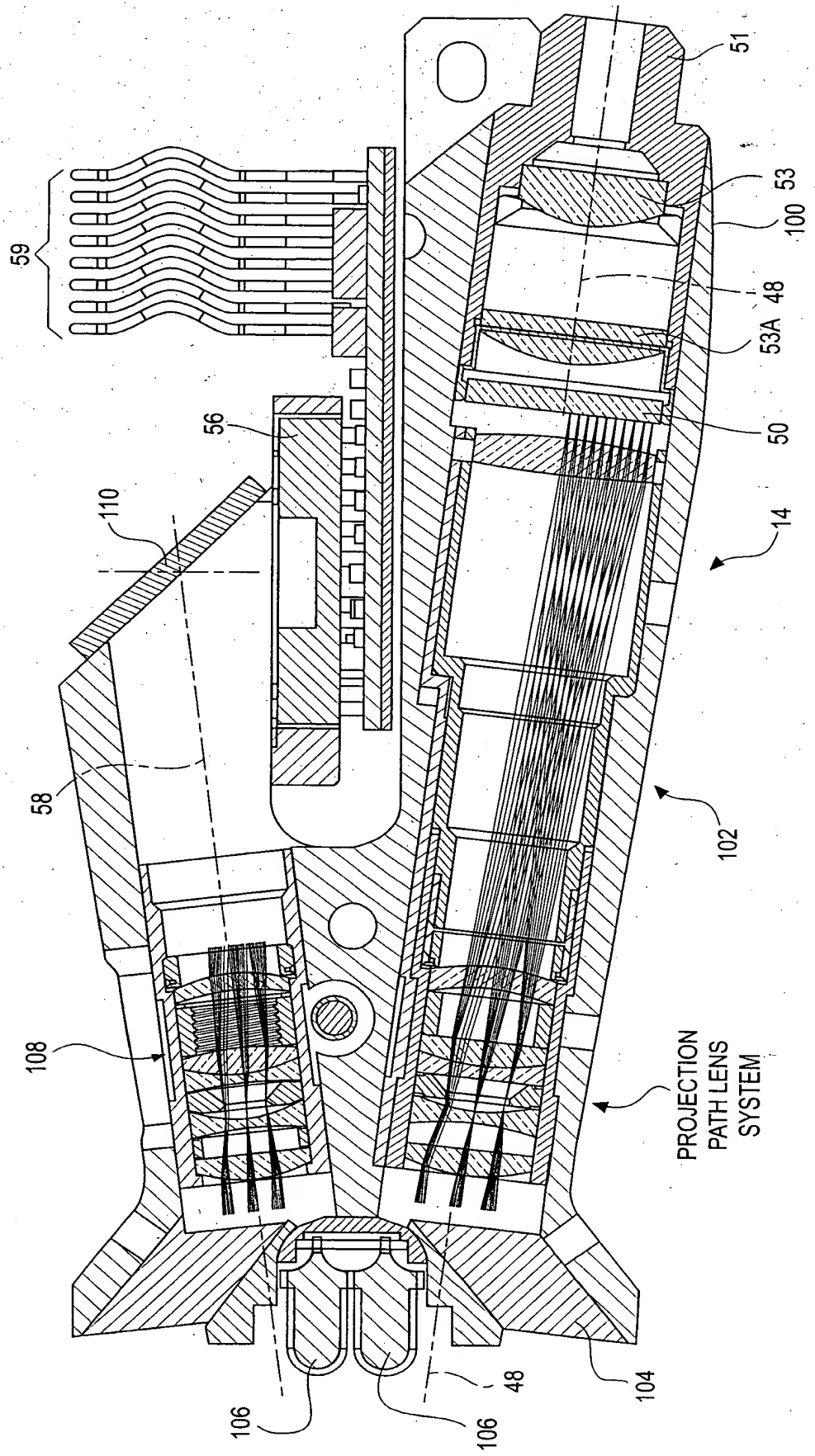


FIG. 7



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FIG. 8

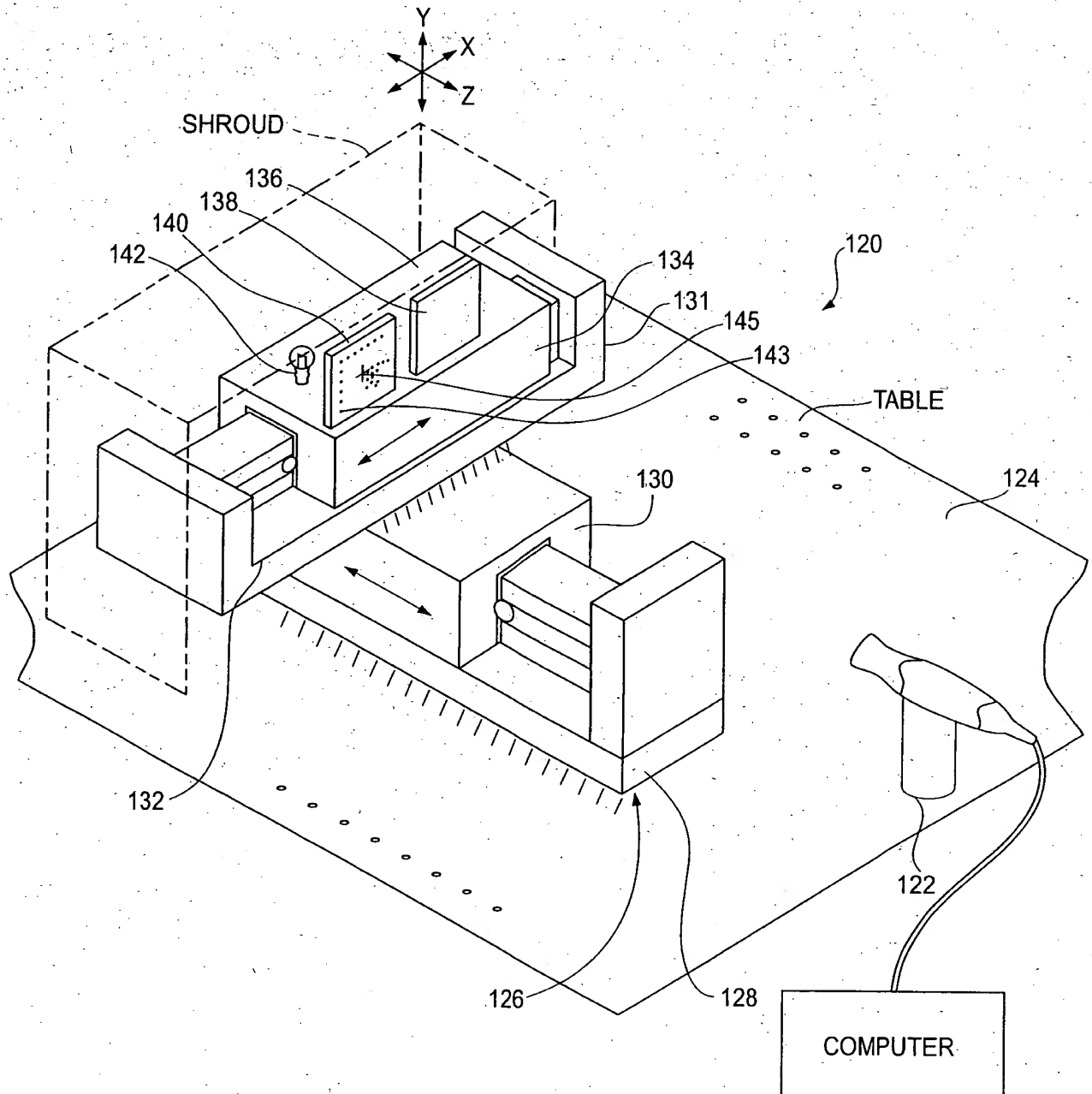
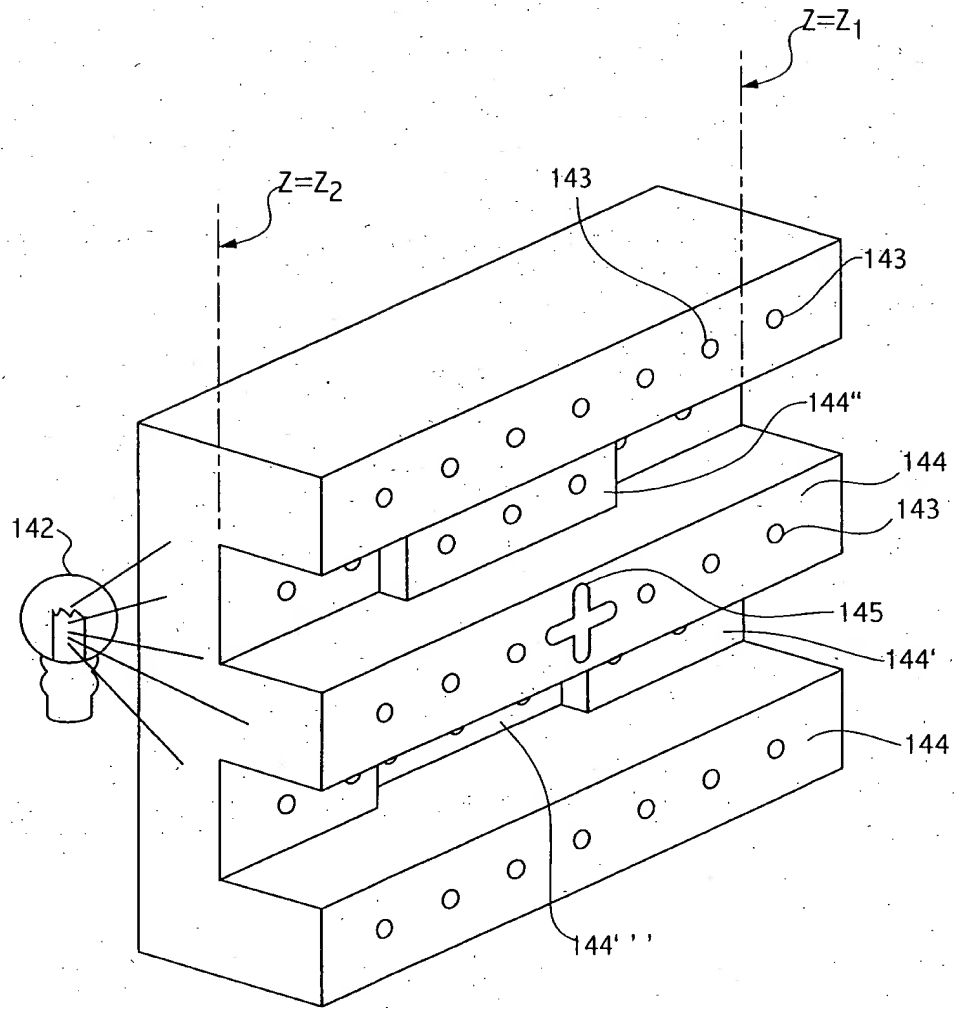
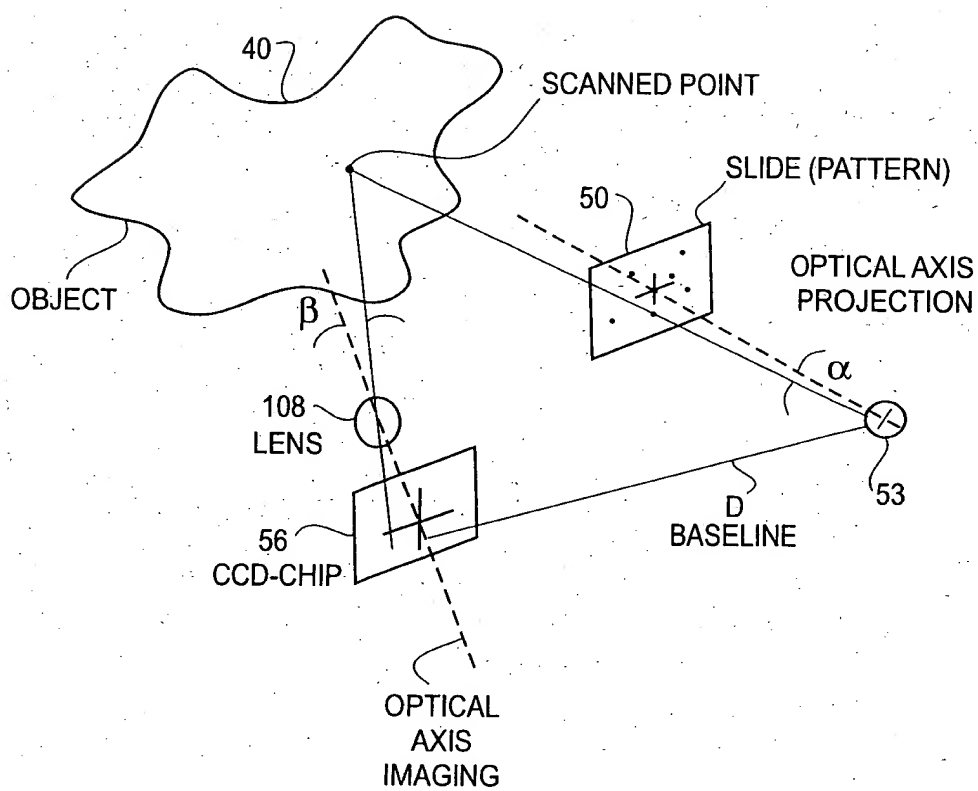


FIG. 8A



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FIG. 9



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FIG. 9A

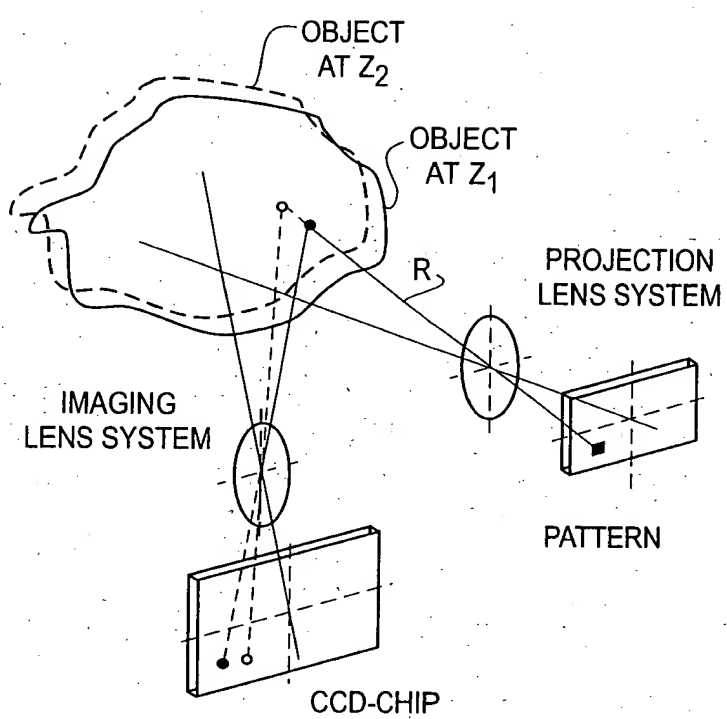


FIG. 9B

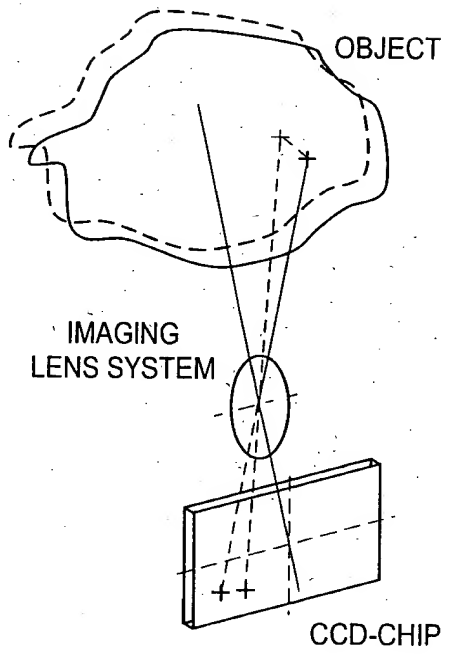
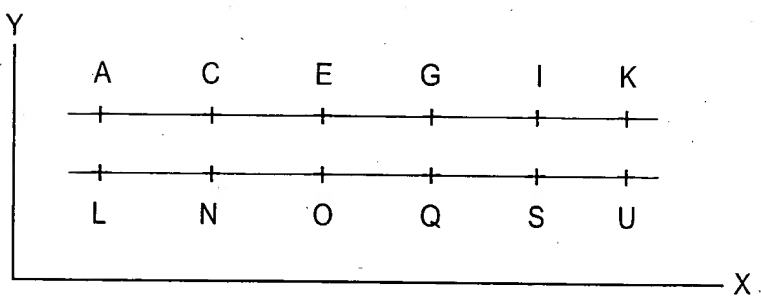


FIG. 9C



PIXEL COORDINATES FOR PORTIONS OF THE PATTERN ASSIGNED TO A CERTAIN Z-LEVEL

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FIG. 10

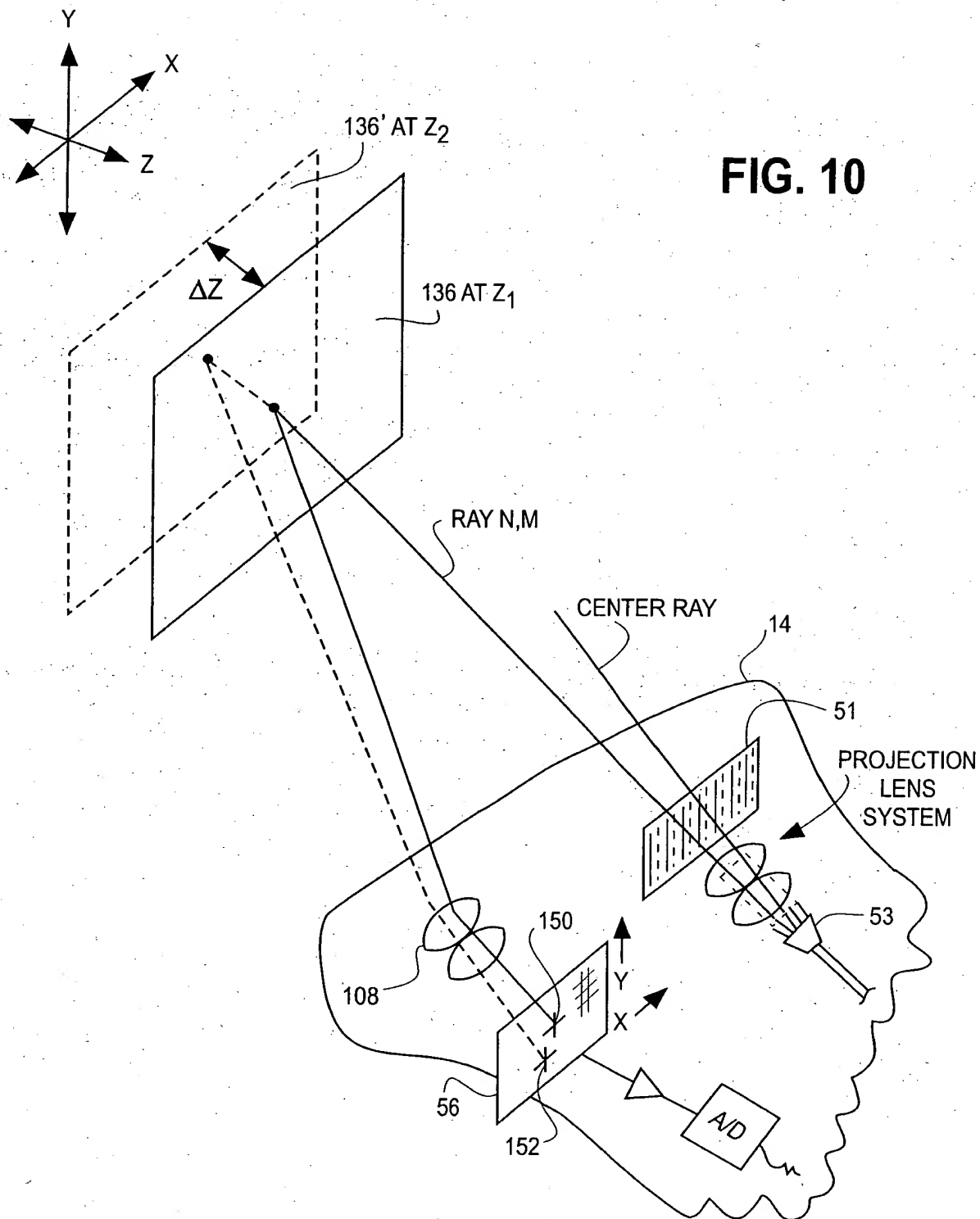


FIG. 11

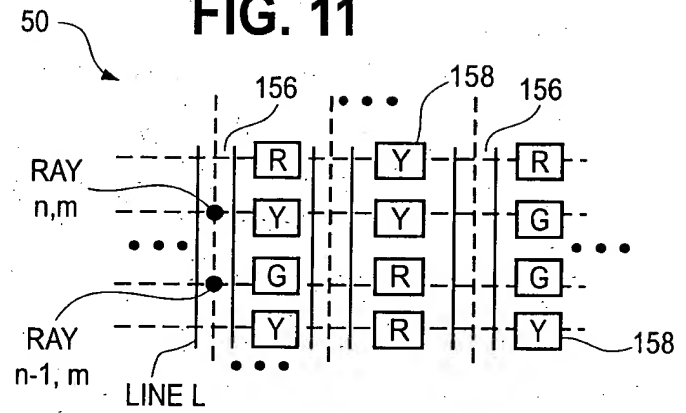


FIG. 12

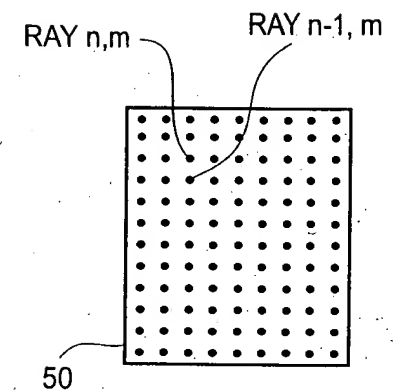


FIG. 13

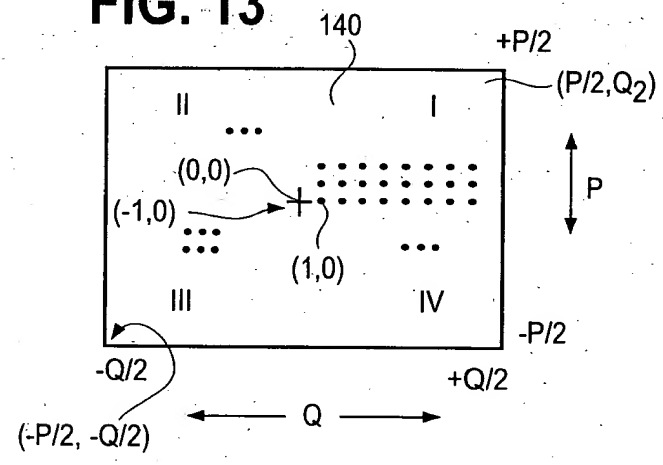


FIG. 14

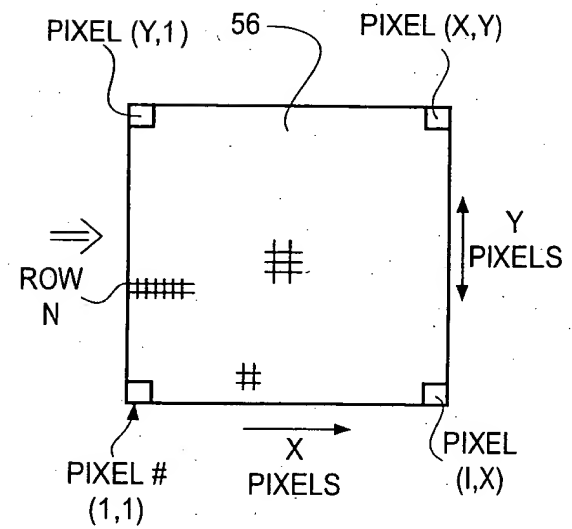


FIG. 15

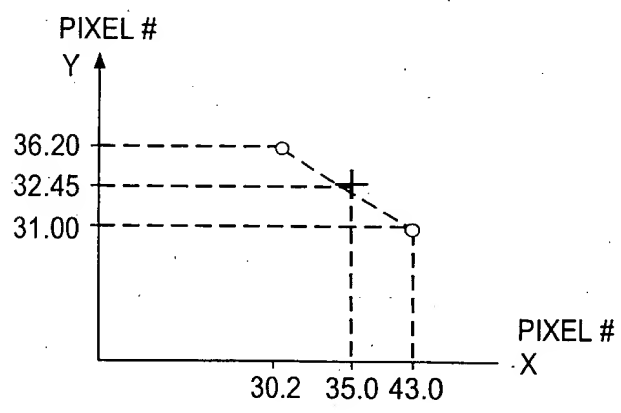
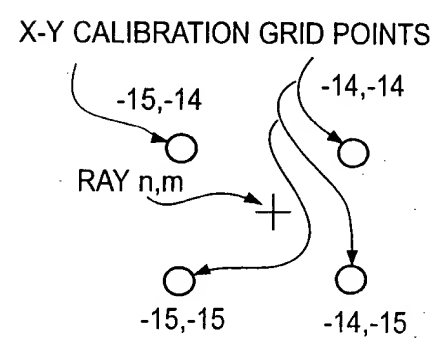


FIG. 16



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FIG. 17

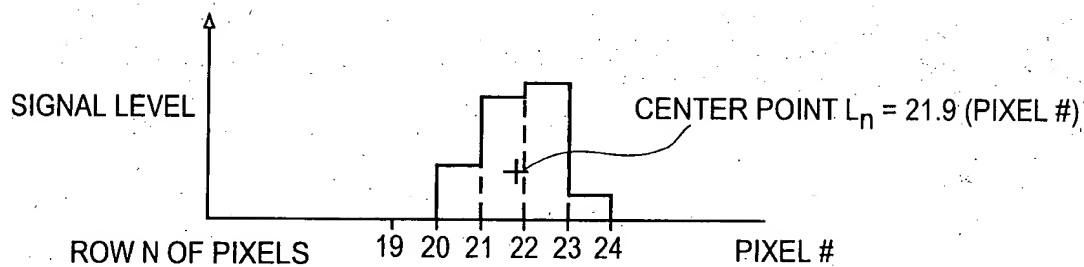


FIG. 18

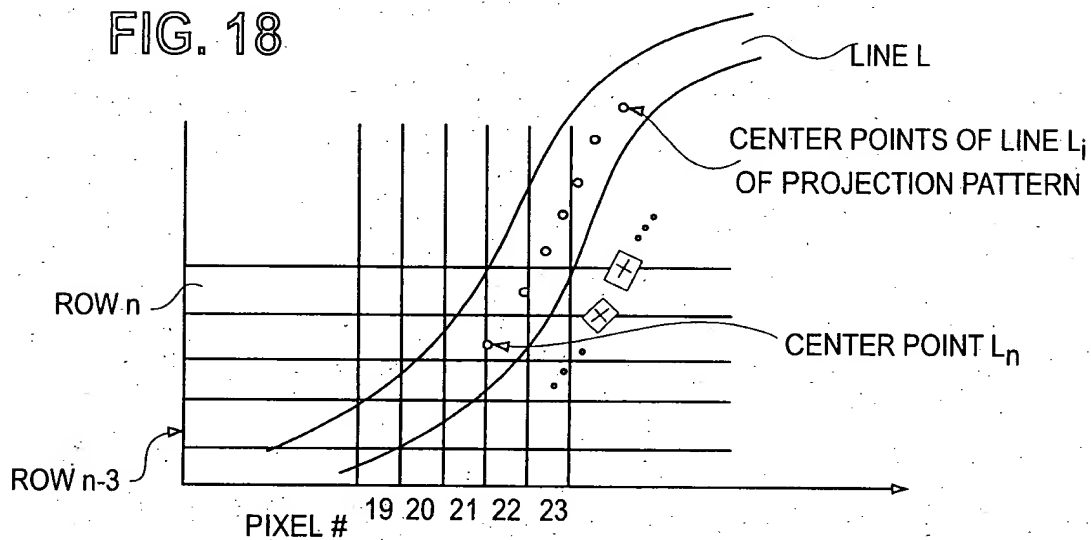
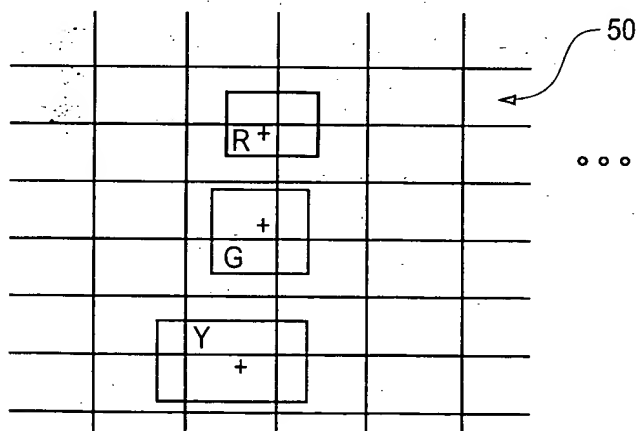


FIG. 19



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FIG. 20

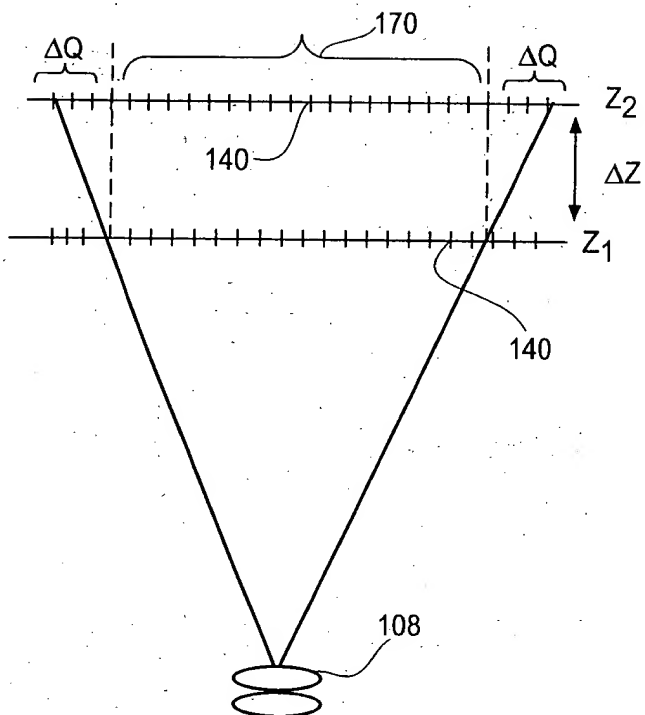


FIG. 21

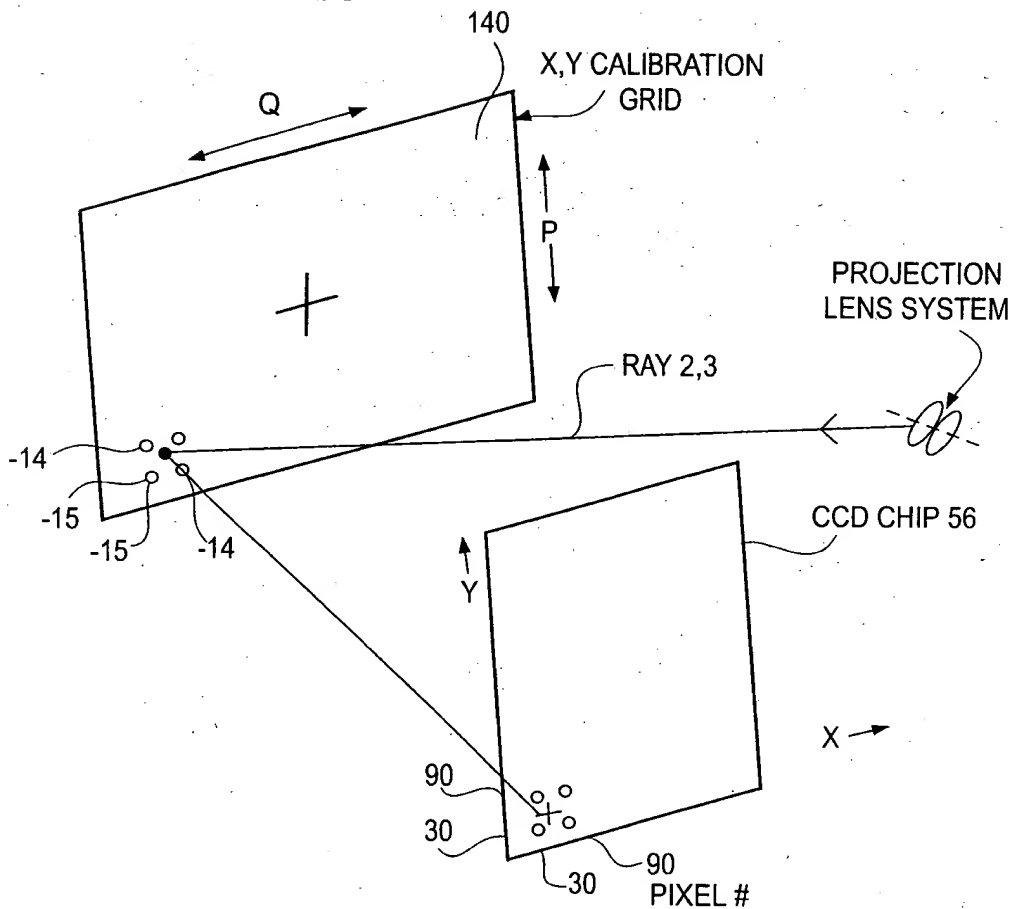


FIG. 22

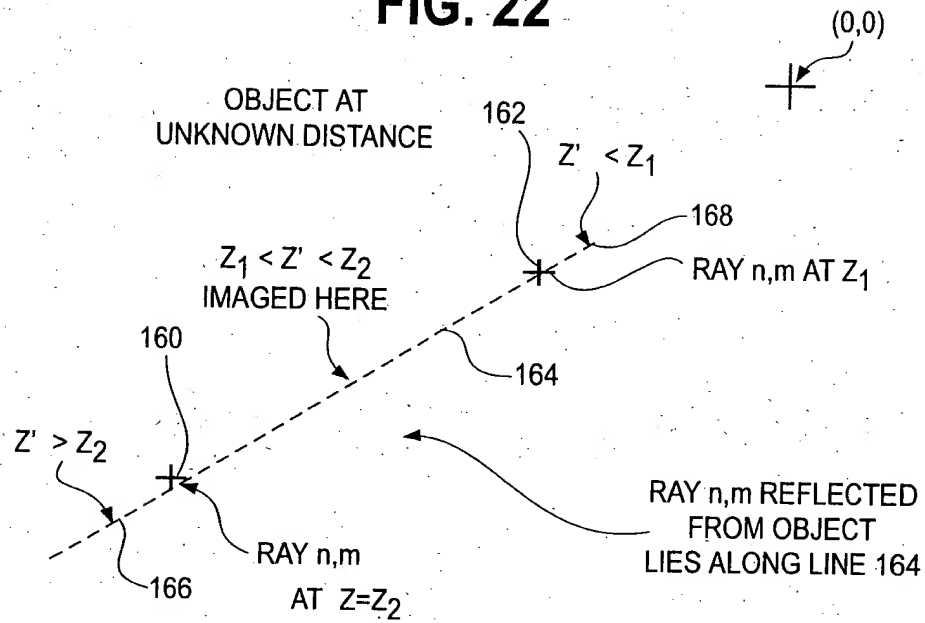
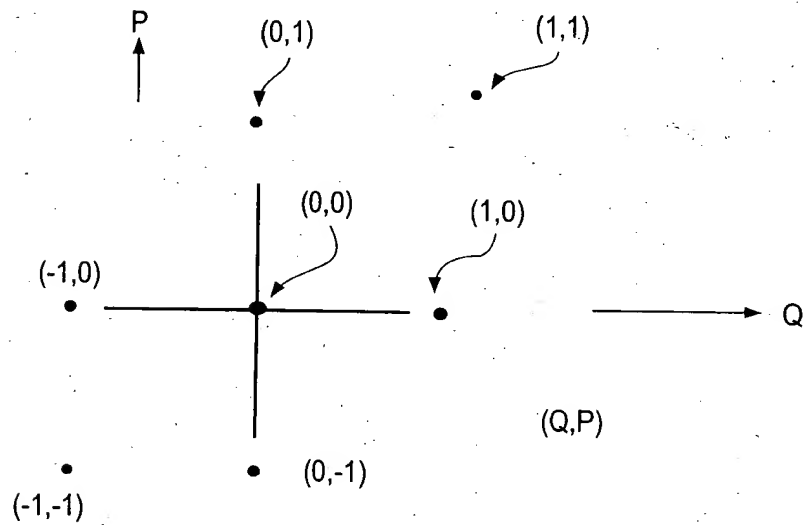


FIG. 23





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FIG. 24

CCD_X, CCD_Y = PIXEL #, IN SUBPIXEL RESOLUTION

(BEFORE)

CALIBRATION TABLE #1

	LINE 1					LINE 2					LINE N				
	ROW 1	ROW 2	ROW 3	ROW 4	...	ROW M	ROW 1	ROW 2	ROW 3	ROW 4	...	ROW M	ROW 1	ROW 2	ROW M
CCD _X	1.0	1.1	1.5	2.1		...	27.1	29.5	30.2	37.1					
MM DIST.															
CCD _Y	10.2	20.4	32.8	44.5			11.5	21.6	36.2	44					
MM DIST.															
CCD _X	3.9	4.5	6.8	12.2			34.0	41.1	43.0	46					
MM DIST.															
CCD _Y	12.1	21.5	30.4	46.3			13.2	21.8	31.0	48.2					
MM DIST.															

Z₁

Z₂

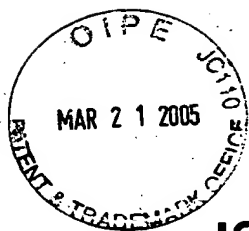


FIG. 25

CALIBRATION TABLE #2

(Q,P)

QUADRANT I

QUADRANT I	ROW 0							ROW 1				ROW + P/2				
	(0,0)	(1,0)	(2,0)	(3,0)	...	(Q/2 - ΔQ,0)	...	(Q/210)	(0,1)	(1,1)	(2,1)	...	(0, P/2)	(1, P/2)	...	(Q/2, P/2)
Z ₁	CCDX 640.1	700.2	760.6	820.5	...	...	...	—	640.1	700.2	...	...	...	...	...	1,279.5
	CCDY 640.1	640.1	640.3	640.4		...	...	—	701.2	701.5	...	...	...	...	...	1,279.4
Z ₂	CCDX 640.2	680.3	741.2	801.6		...	...	1,279.5	...	681.2	...	...	...	...	...	1,256.4
	CCDY 640.2	640.3	640.1	640.1		...	...	640.2	...	680.9	...	...	...	...	...	1,251.5

QUADRANT II

ROW + P/2

ROW 1

ROW

	(-1,0)	(-2,0)	(-3,0)	(-4,0)	...	(-Q/2 - ΔQ,0)	...	(-Q/210)	(-1,1)	(-2,1)	(-3,1)	...	(-1, P/2)	(-2, P/2)	...	(-Q/2, P/2)
Z ₁	CCDX															
	CCDY															
Z ₂	CCDX															
	CCDY															

QUADRANT III

...

...

Z₁ CCDX (-1,-1) (-2,-1) ...
CCDY
Z₂ CCDX
CCDY

QUADRANT IV

...

...

Z₁ CCDX (0,-1) (1,-1) ...
CCDY
Z₂ CCDX
CCDY

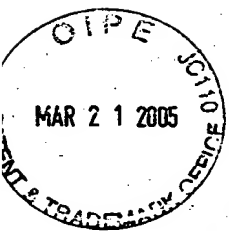


FIG. 26

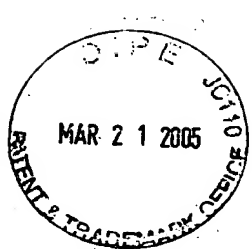
CCD_X, CCD_Y = PIXEL #, IN SUBPIXEL RESOLUTION

CALIBRATION TABLE #1 (AFTER)

	PATTERN				PATTERN				LINE 2				LINE N			
	ROW 1	ROW 2	ROW 3	ROW 4	•••	ROW M	ROW 1	ROW 2	ROW 3	ROW 4	•••	ROW M	ROW 1	ROW 2	•••	ROW M
CCD _X	1.0	1.1	1.5	2.1		•••	27.1	29.5	30.2	37.1						
MM DIST.									-14.6							
CCD _Y	10.2	20.4	32.8	44.5			11.5	21.6	36.2	44						
MM DIST.									-14.4							
CCD _X	3.9	4.5	6.8	12.2			34.0	41.1	43.0	46						
MM DIST.									-14.8							
CCD _Y	12.1	21.5	30.4	46.3			13.2	21.8	31.0	48.2						
MM DIST.									-15.8							

Z₁

Z₂



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Fig. 27

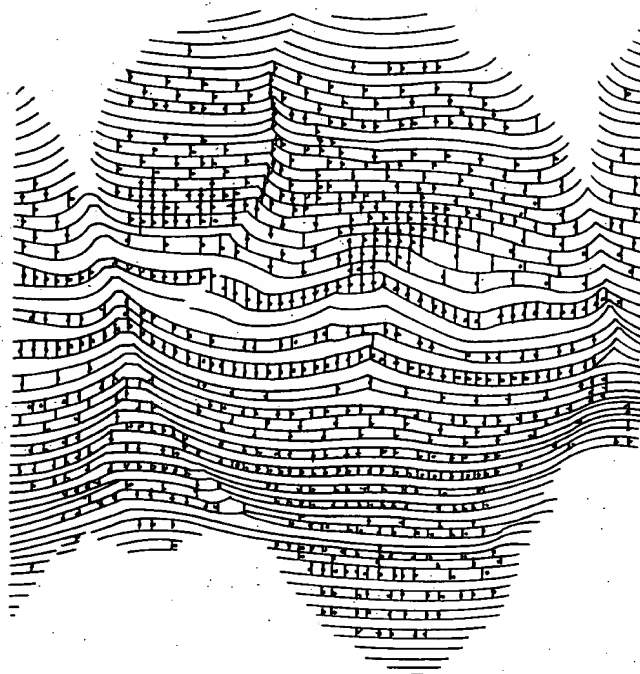
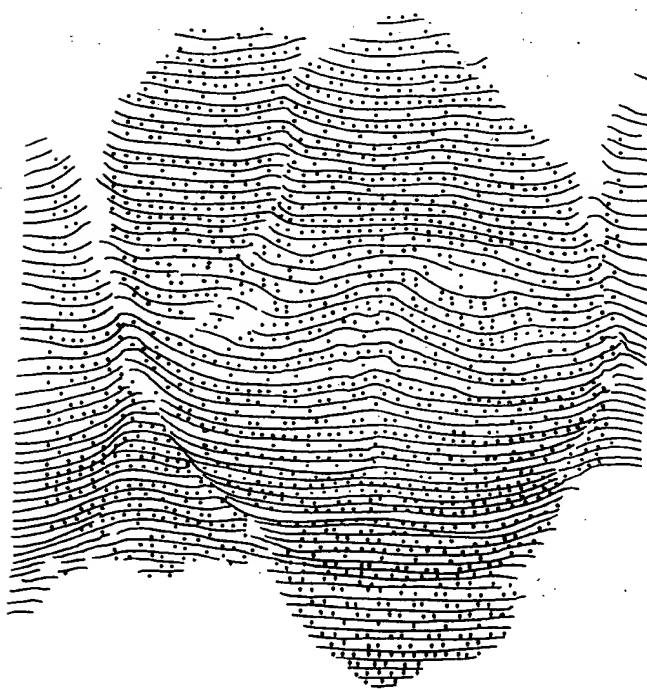
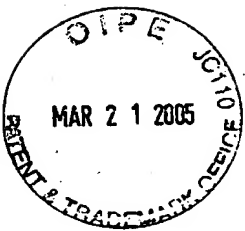


Fig. 28





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Fig. 29



Fig. 30

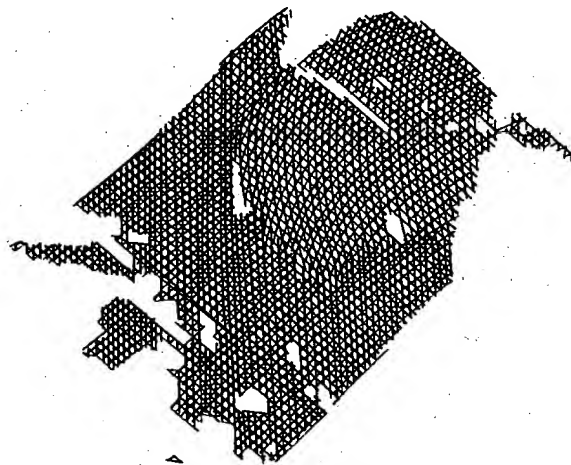
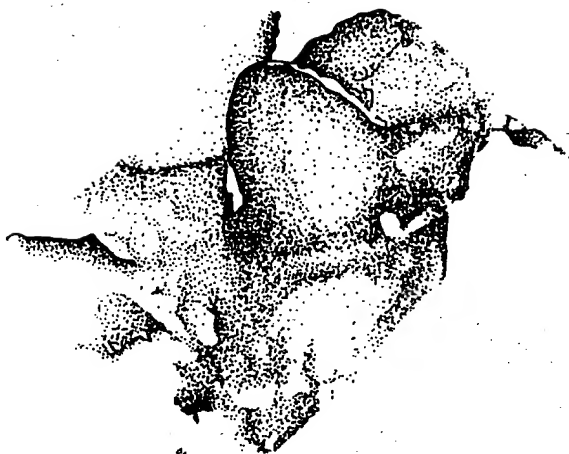


Fig. 31



Fig. 32





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Fig. 33

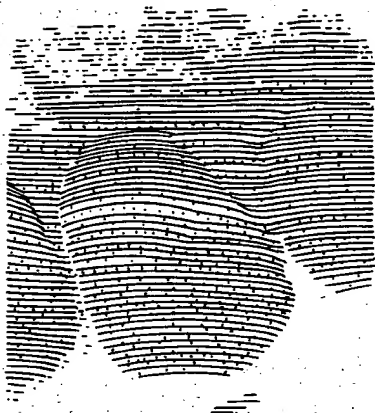


Fig. 34

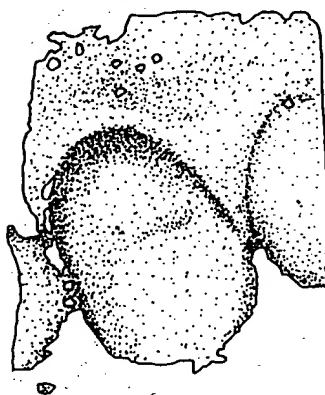
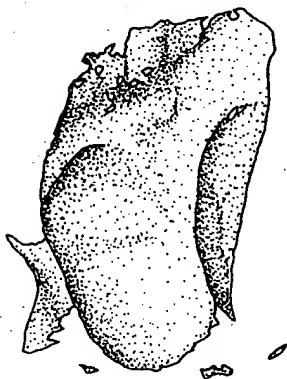
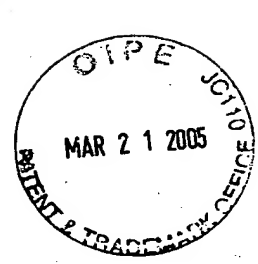


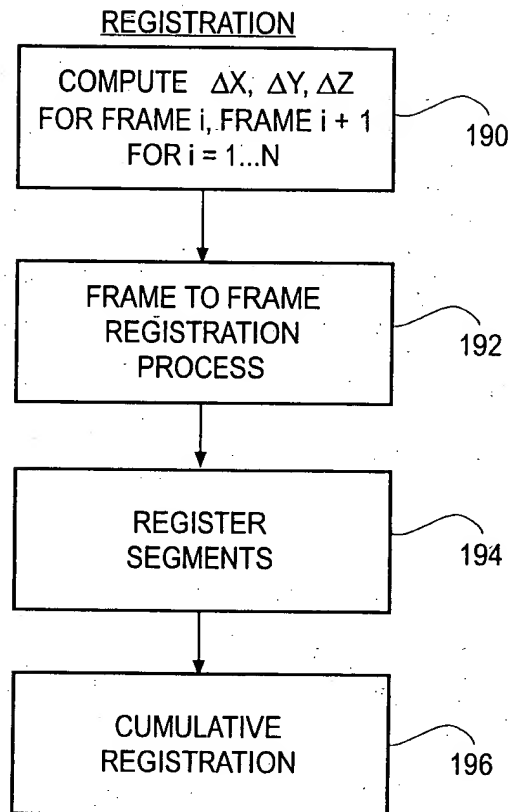
Fig. 35





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FIG. 36



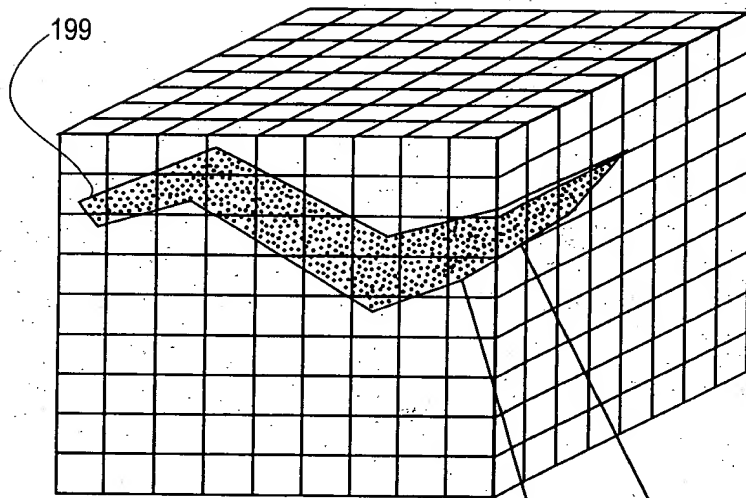
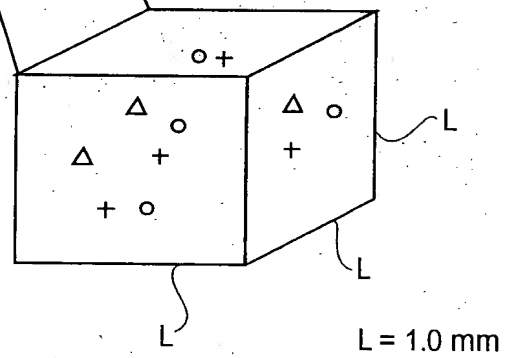


FIG. 37A

FIG. 37B



Δ = POINTS OF FRAME i
 $+$ = POINTS OF FRAME $i+1$
 \circ = POINTS OF FRAME $i+2$

FIG. 37C

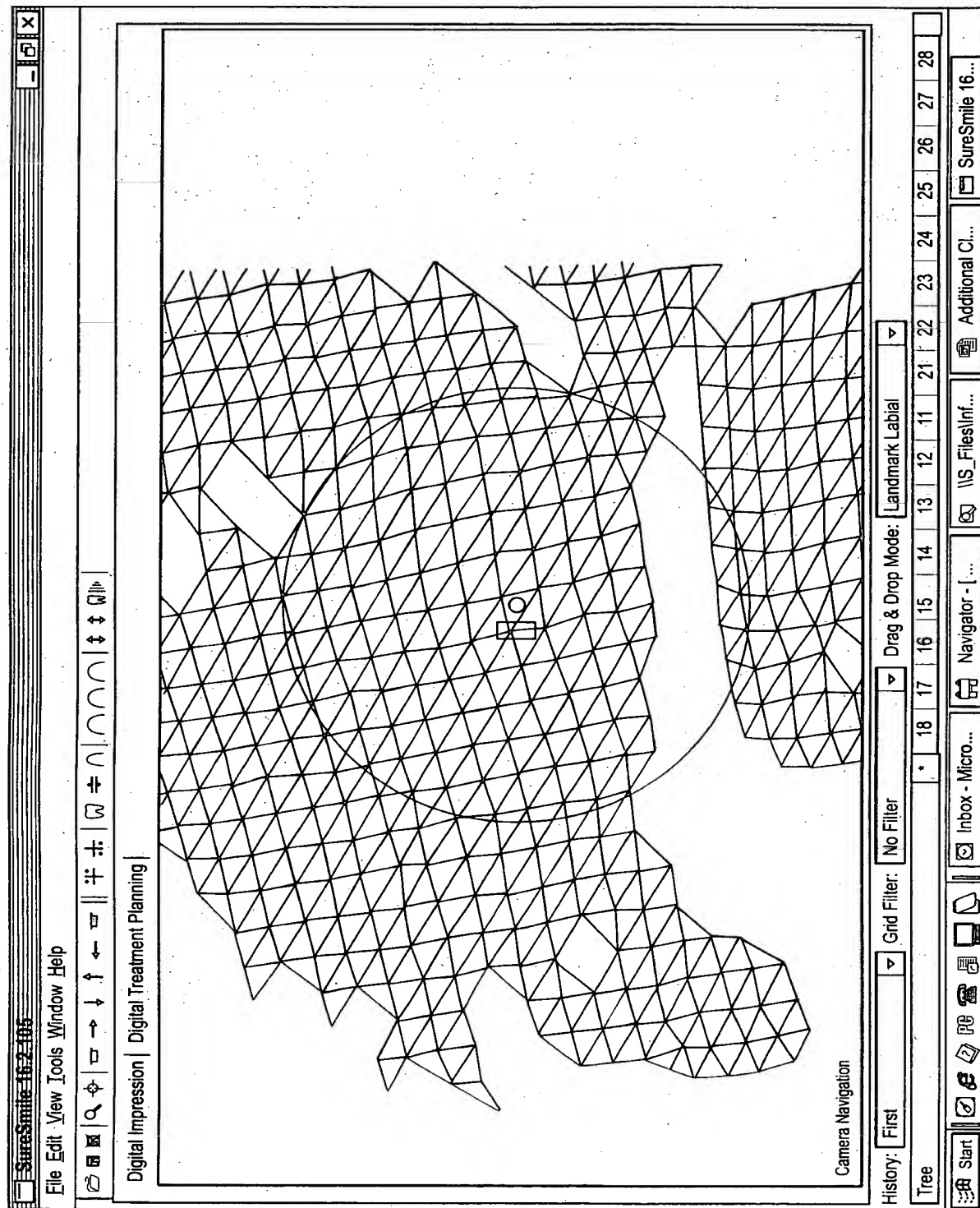
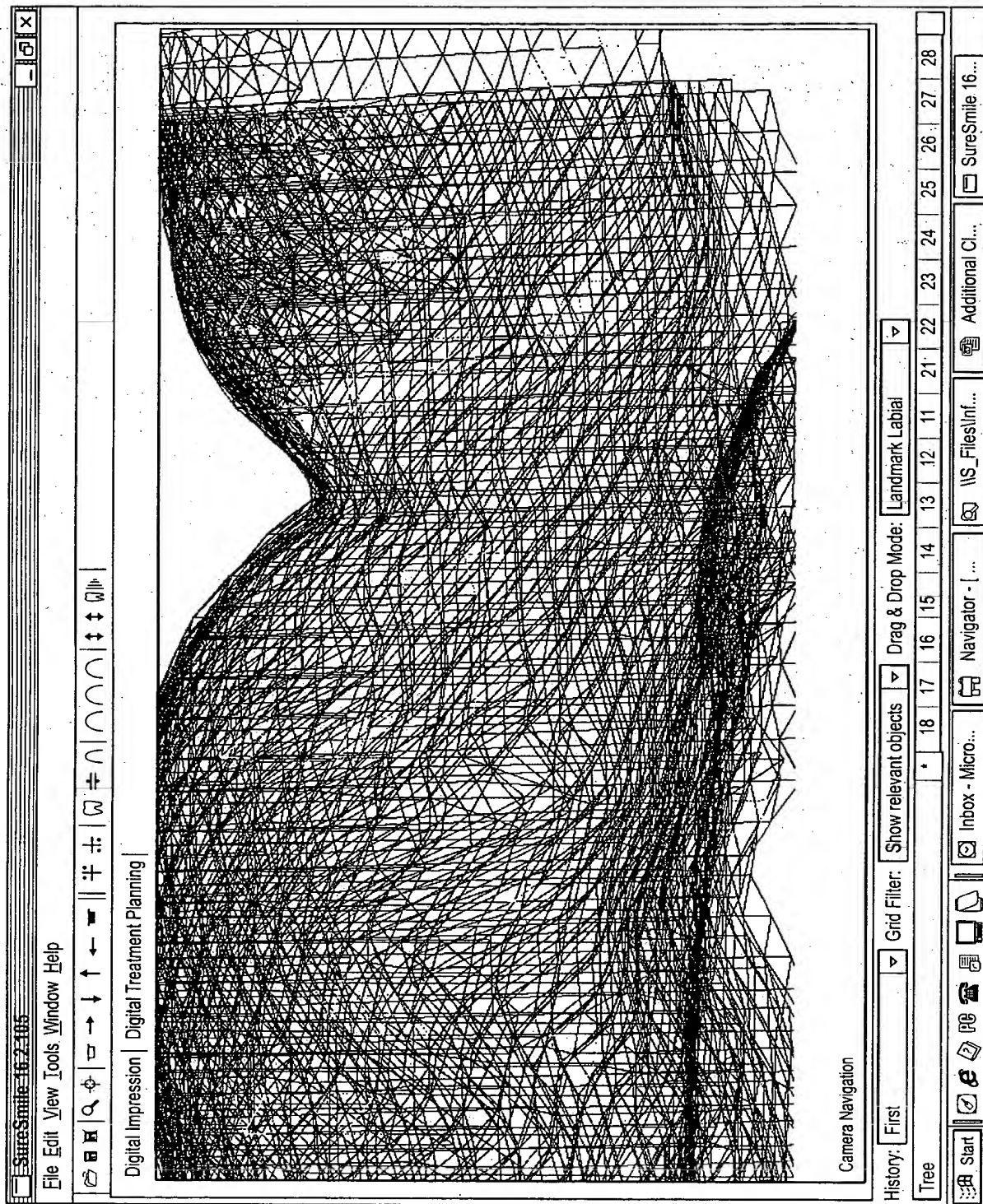
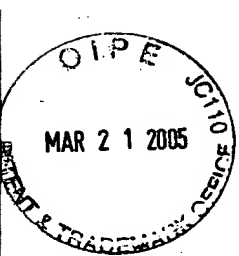


FIG. 37D





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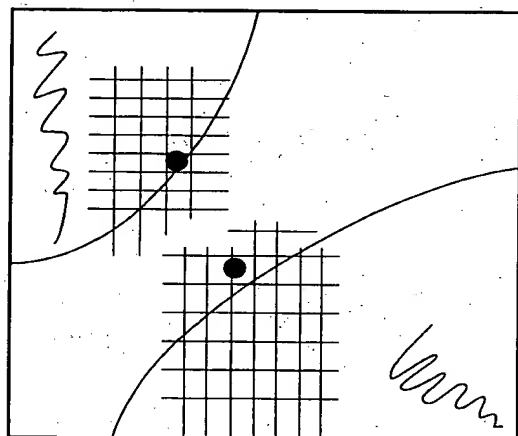


FIG. 38A

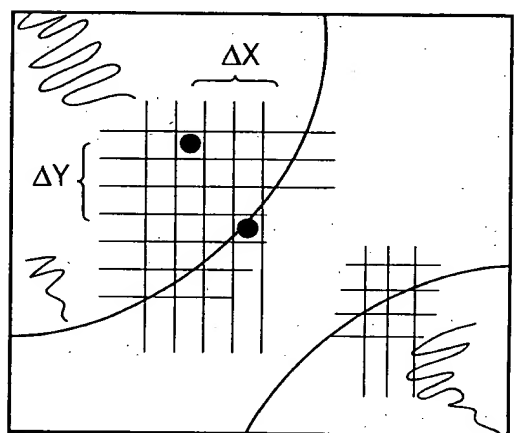


FIG. 38B

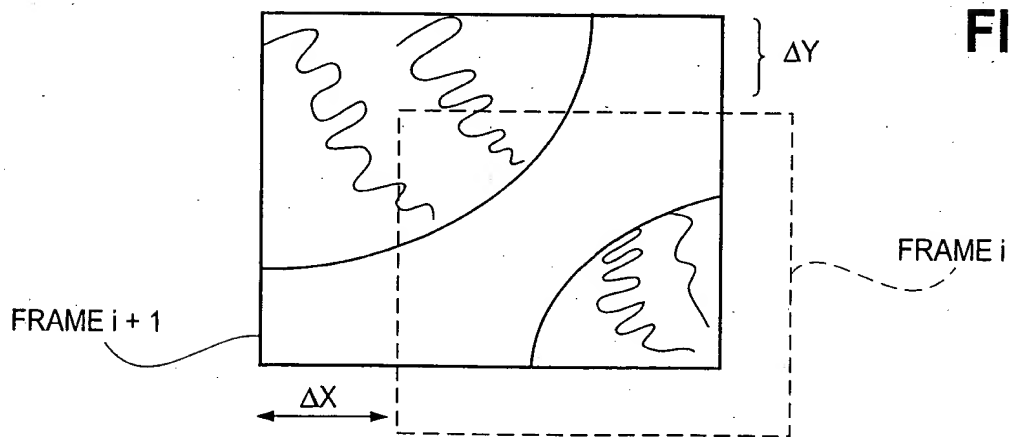


FIG. 38C

FIG. 39A

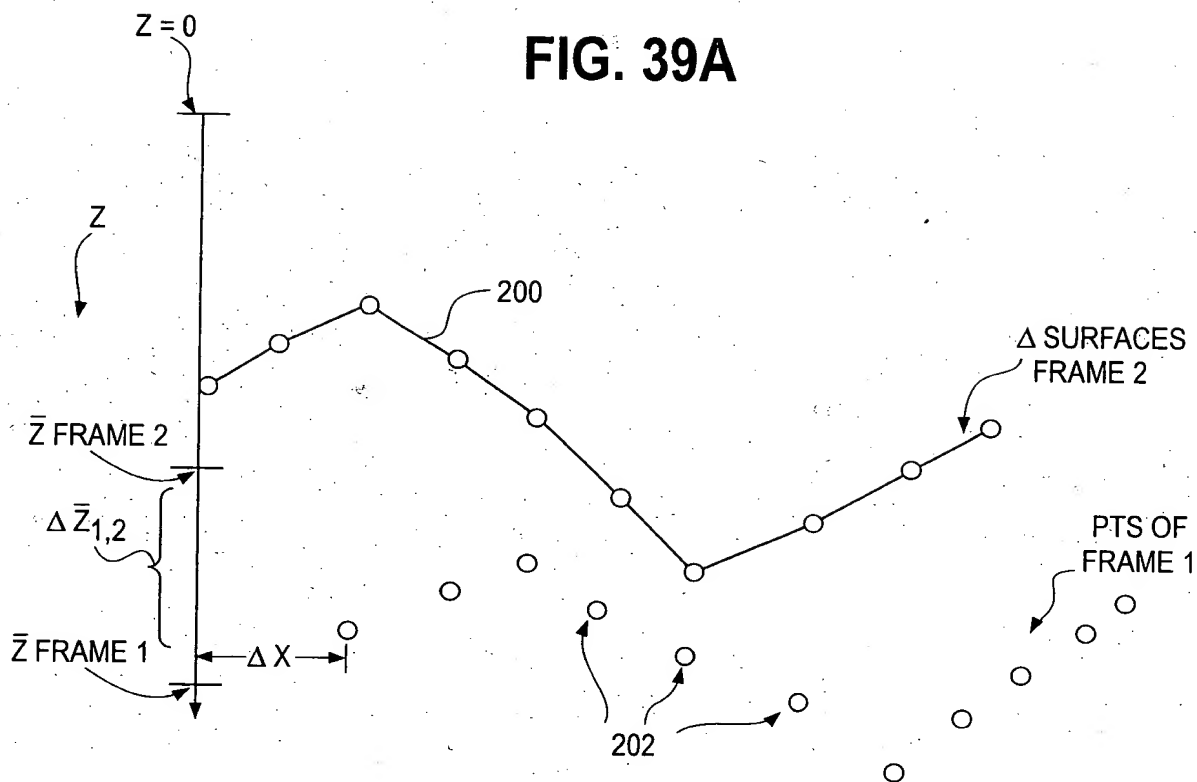
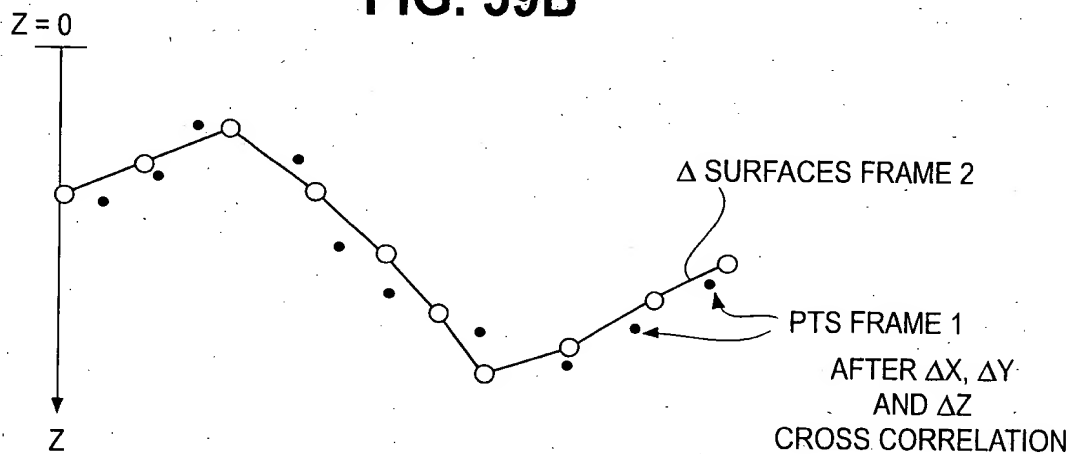
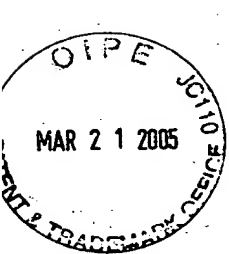


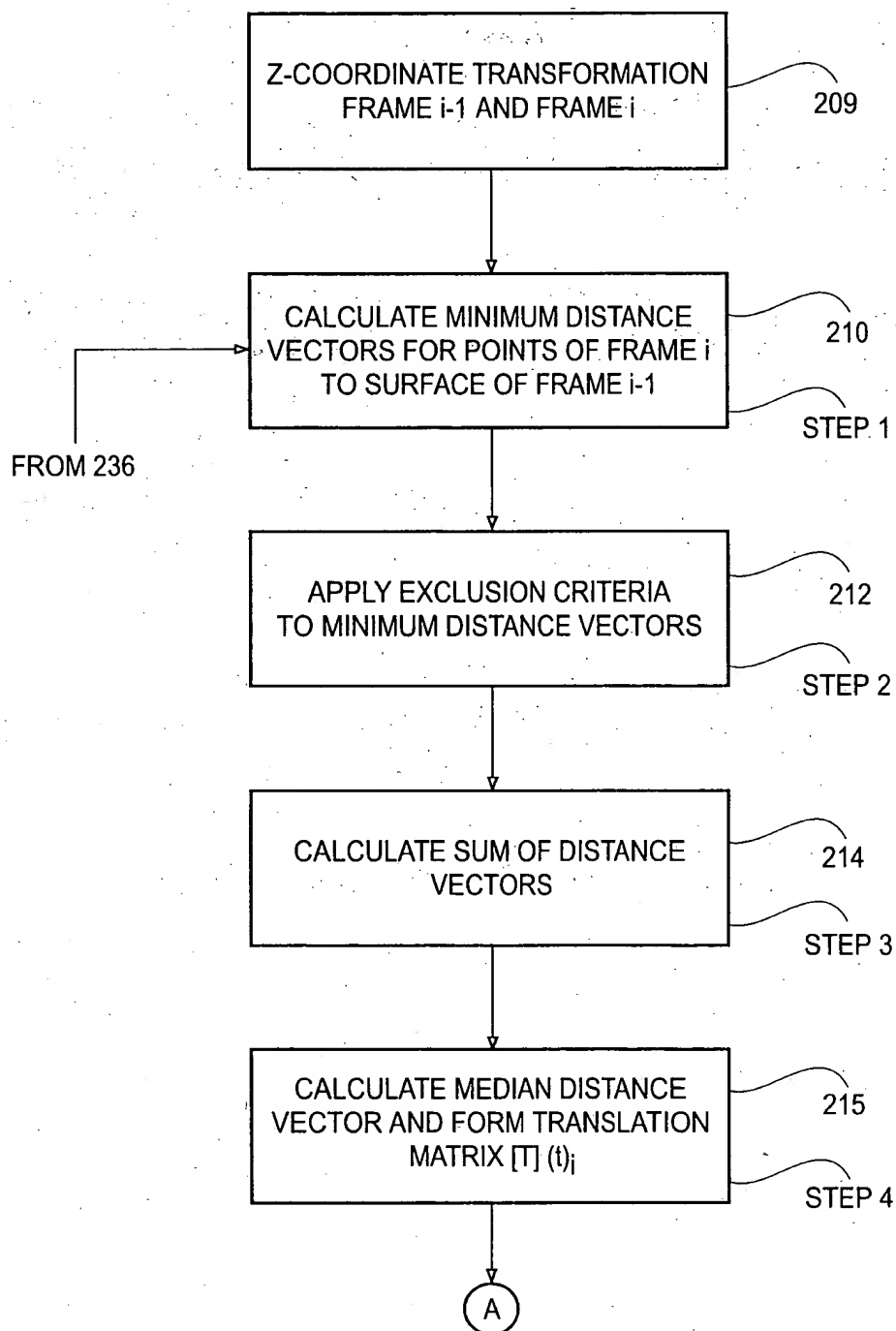
FIG. 39B





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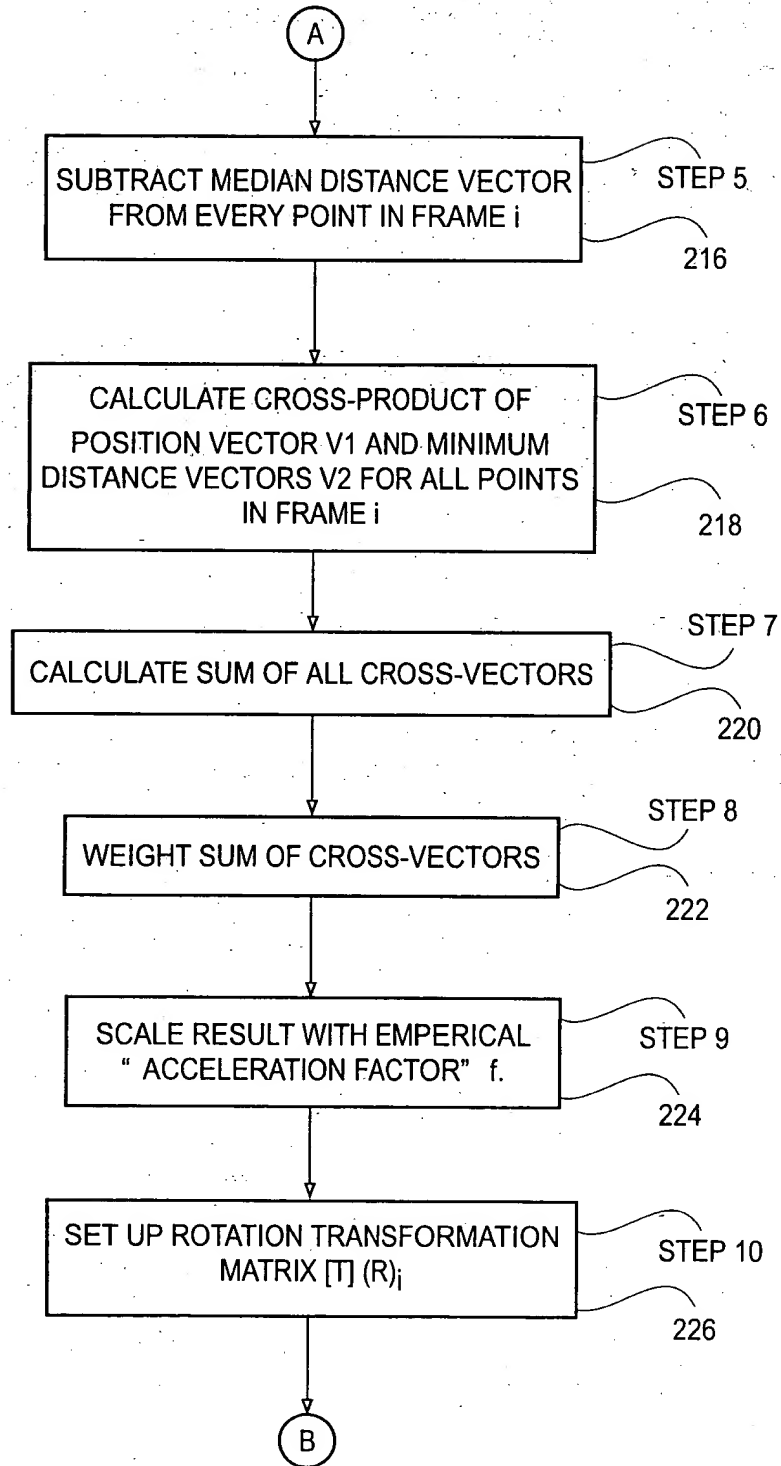
FIG. 40A

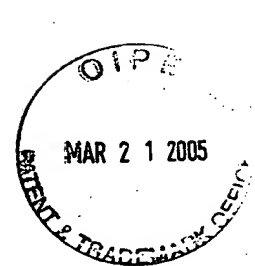




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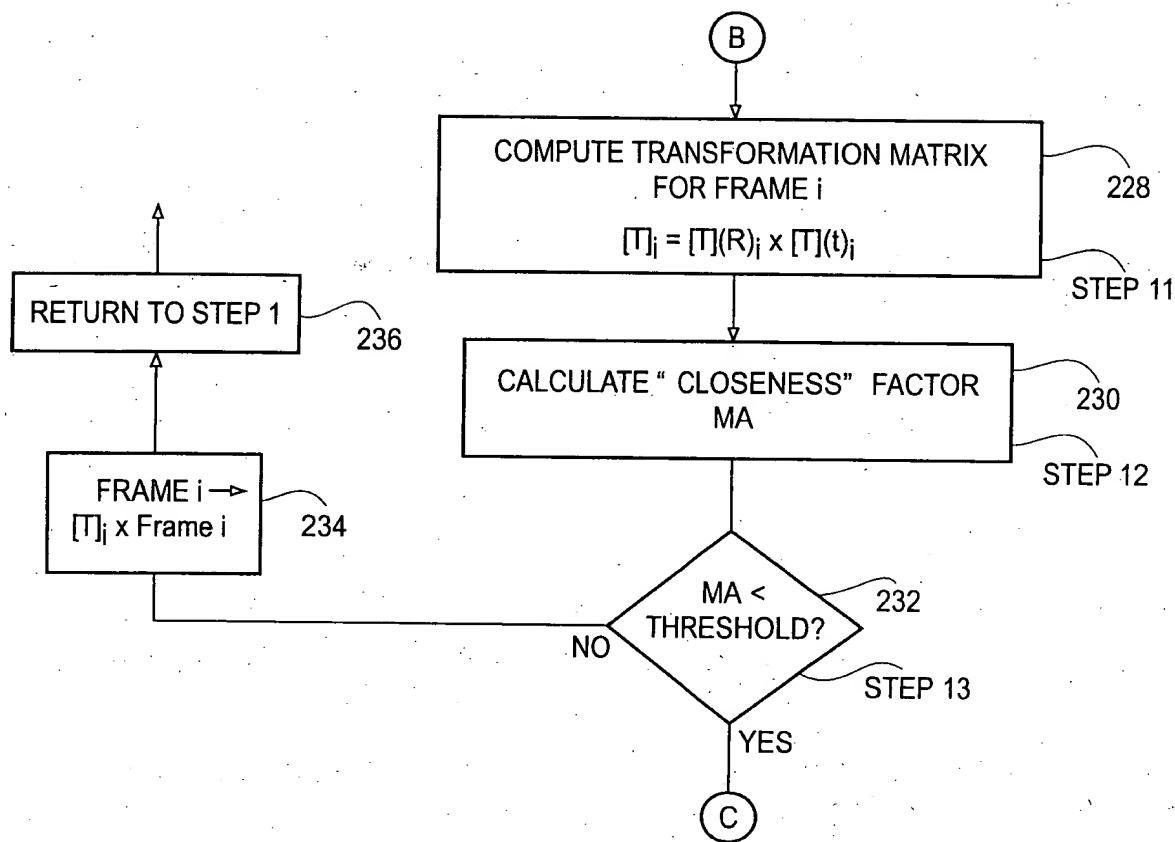
FIG. 40B





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FIG. 40C





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FIG. 40D

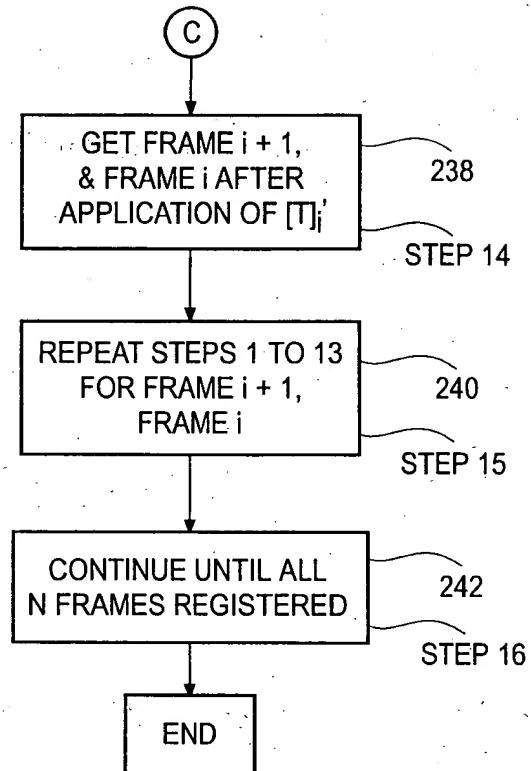


FIG. 41

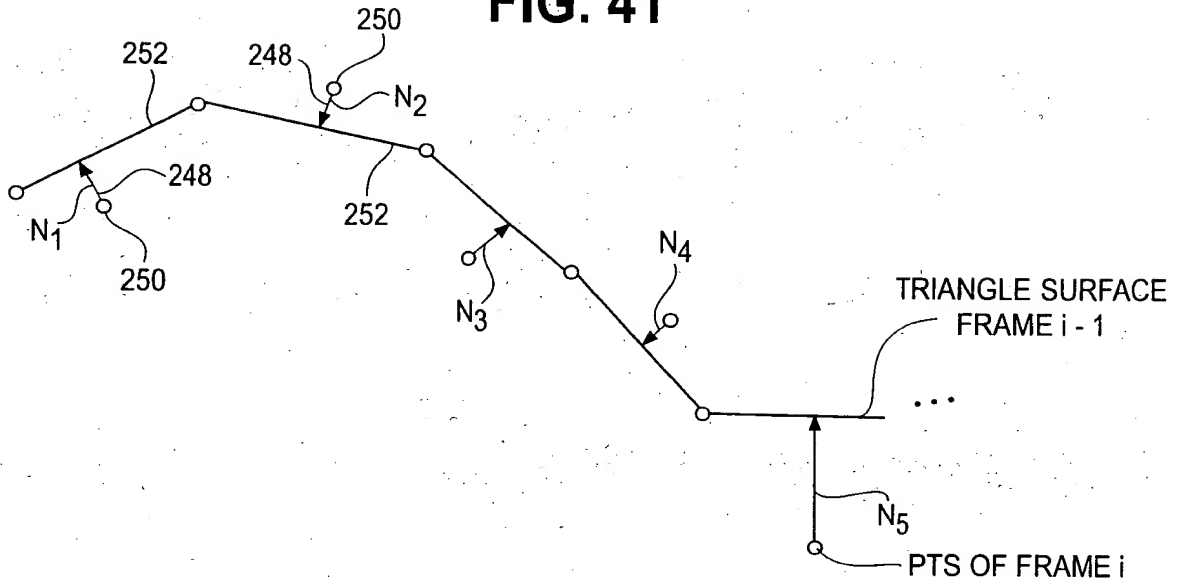


FIG. 42

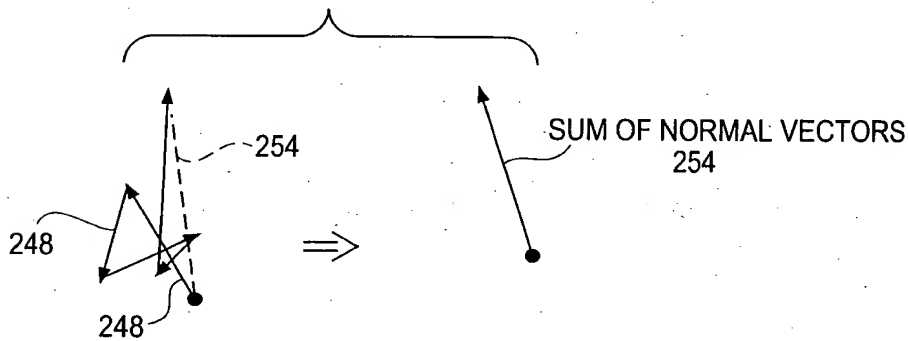


FIG. 43

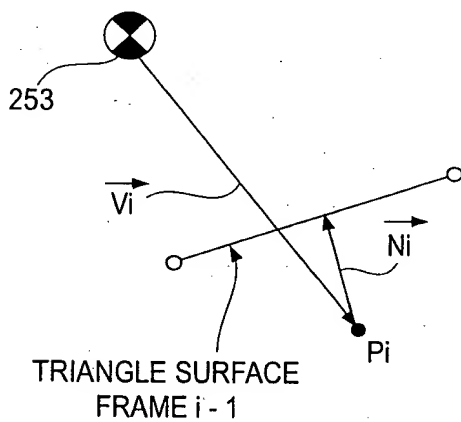
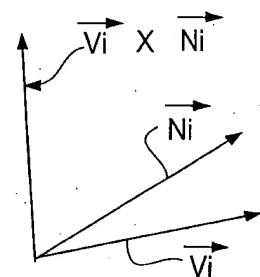
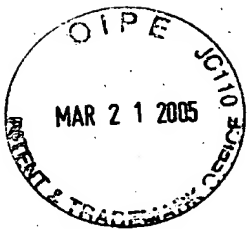


FIG. 44





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FIG. 45

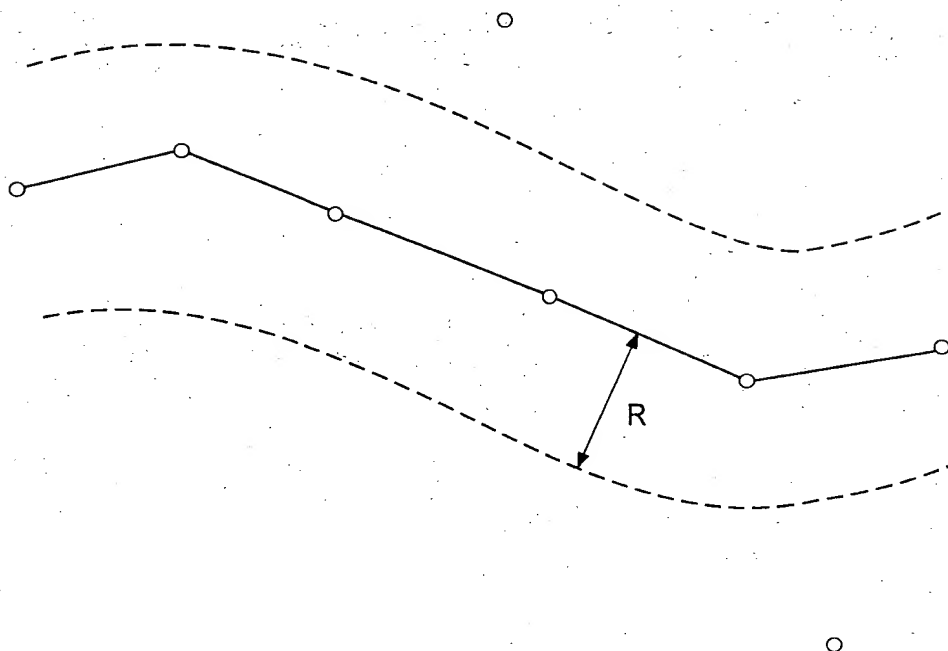


FIG. 46

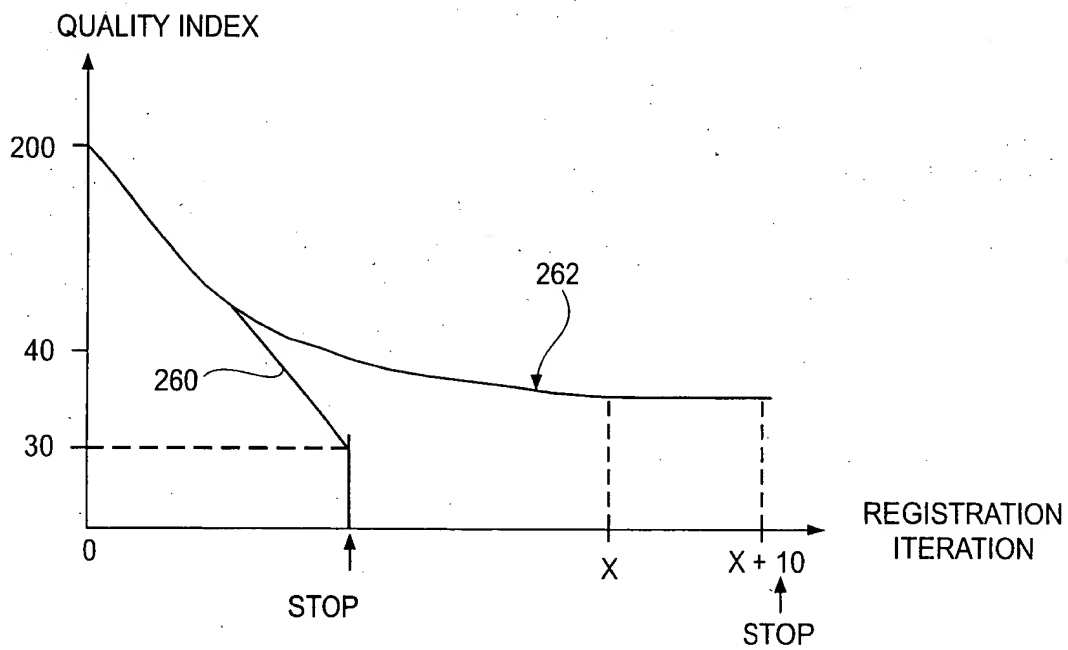


FIG. 47A

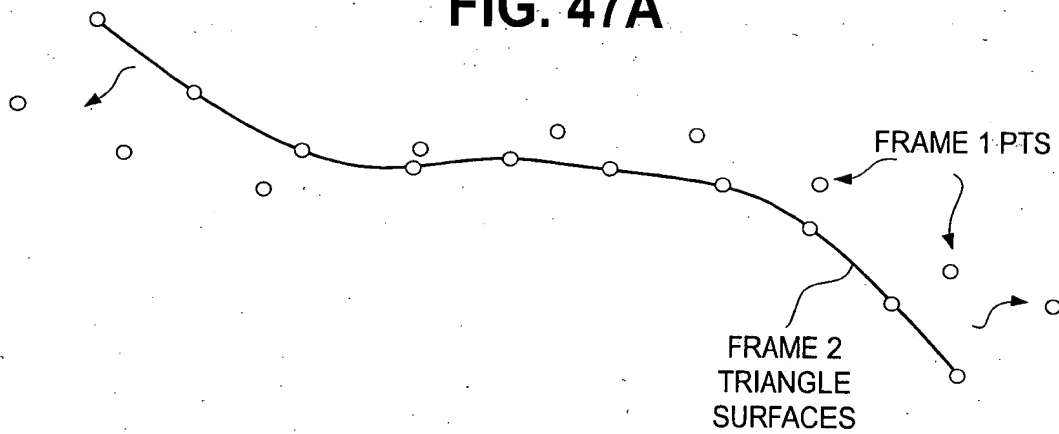
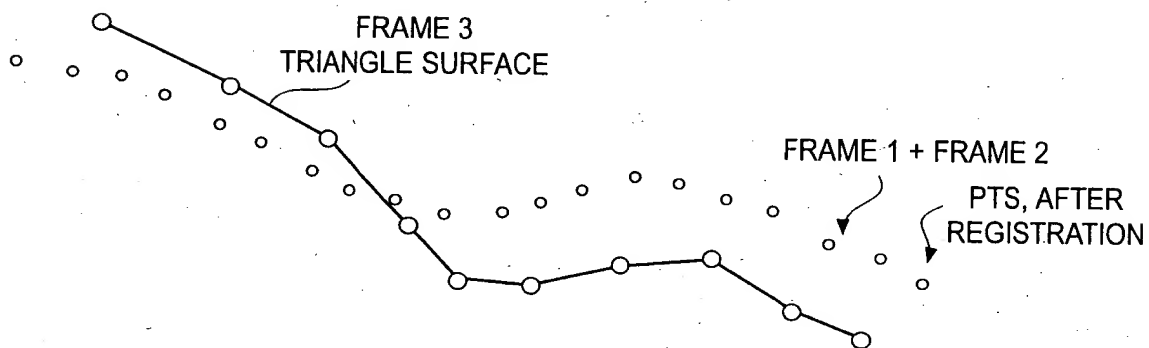


FIG. 47B

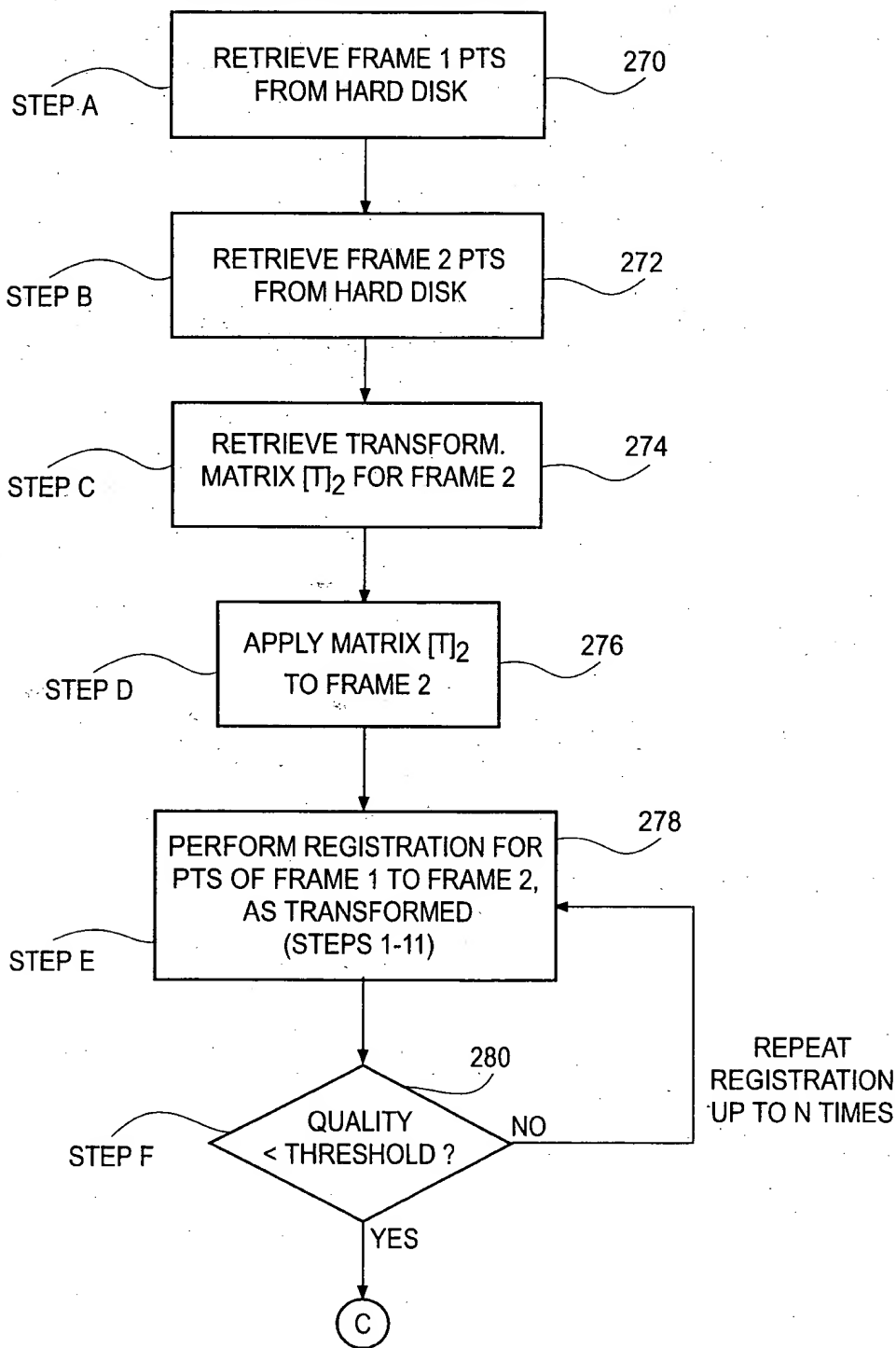


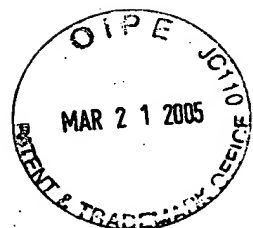


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FIG. 48A

CUMULATIVE REGISTRATION





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FIG. 48B

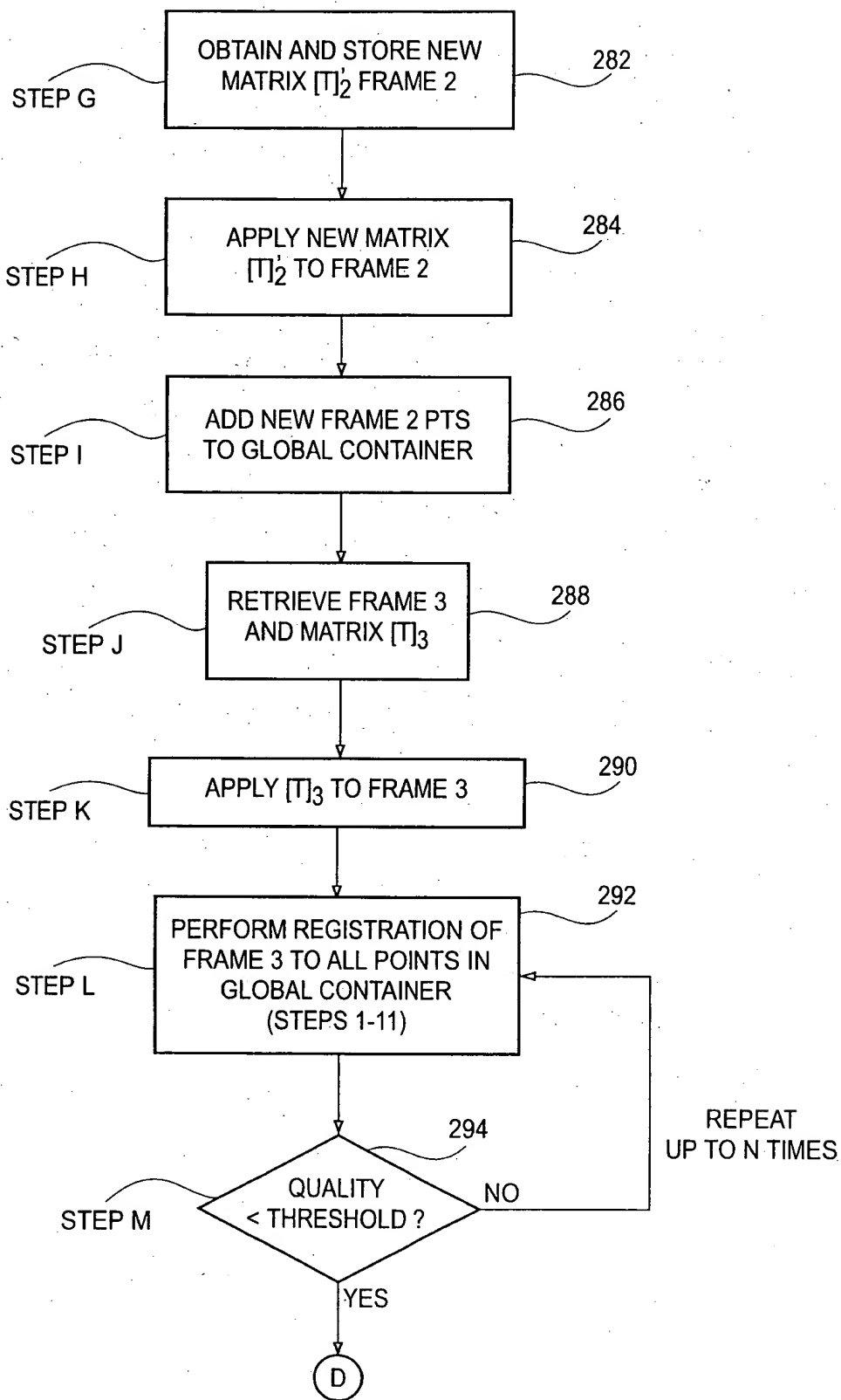
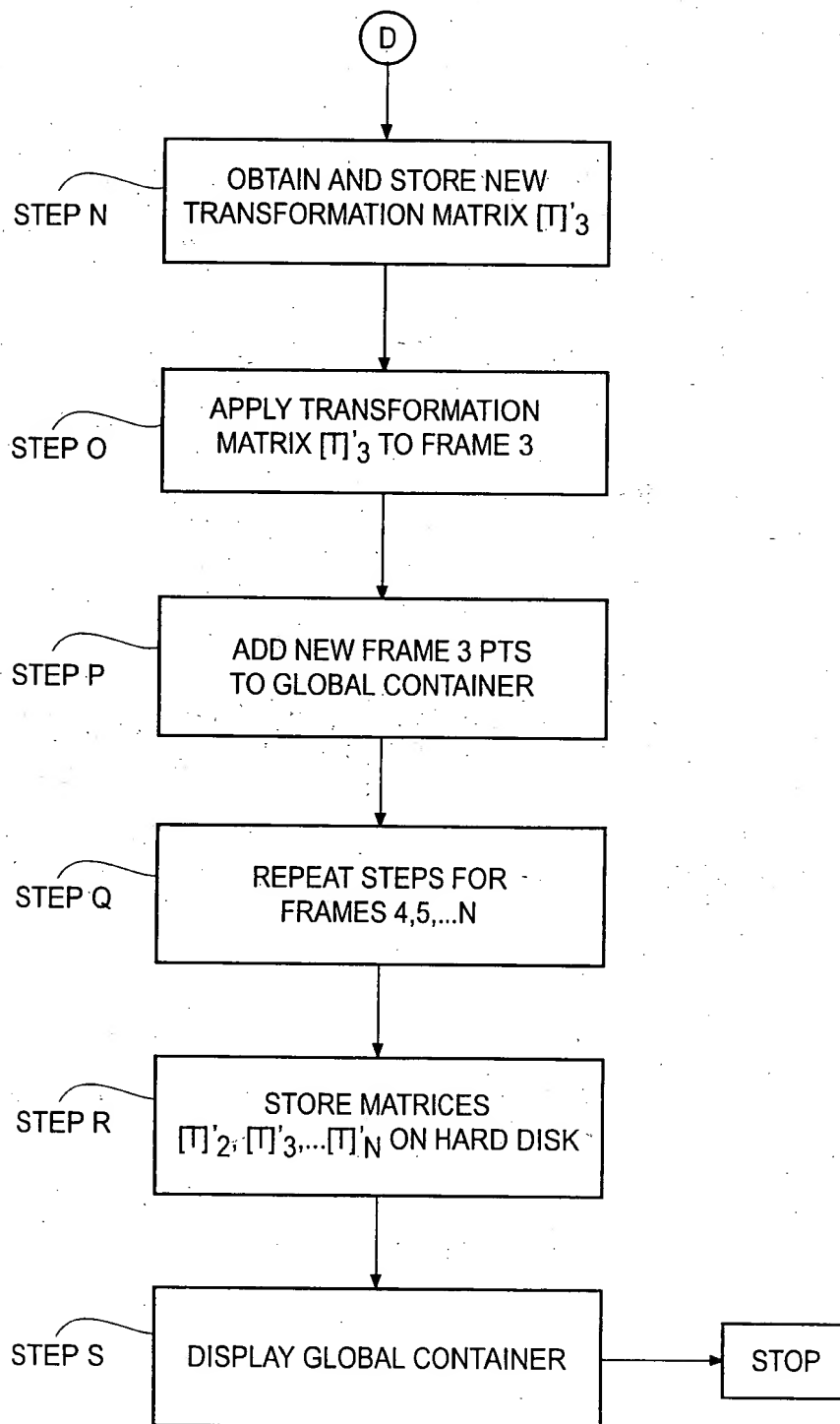
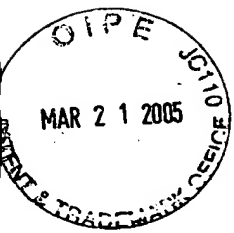


FIG. 48C





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FIG. 49

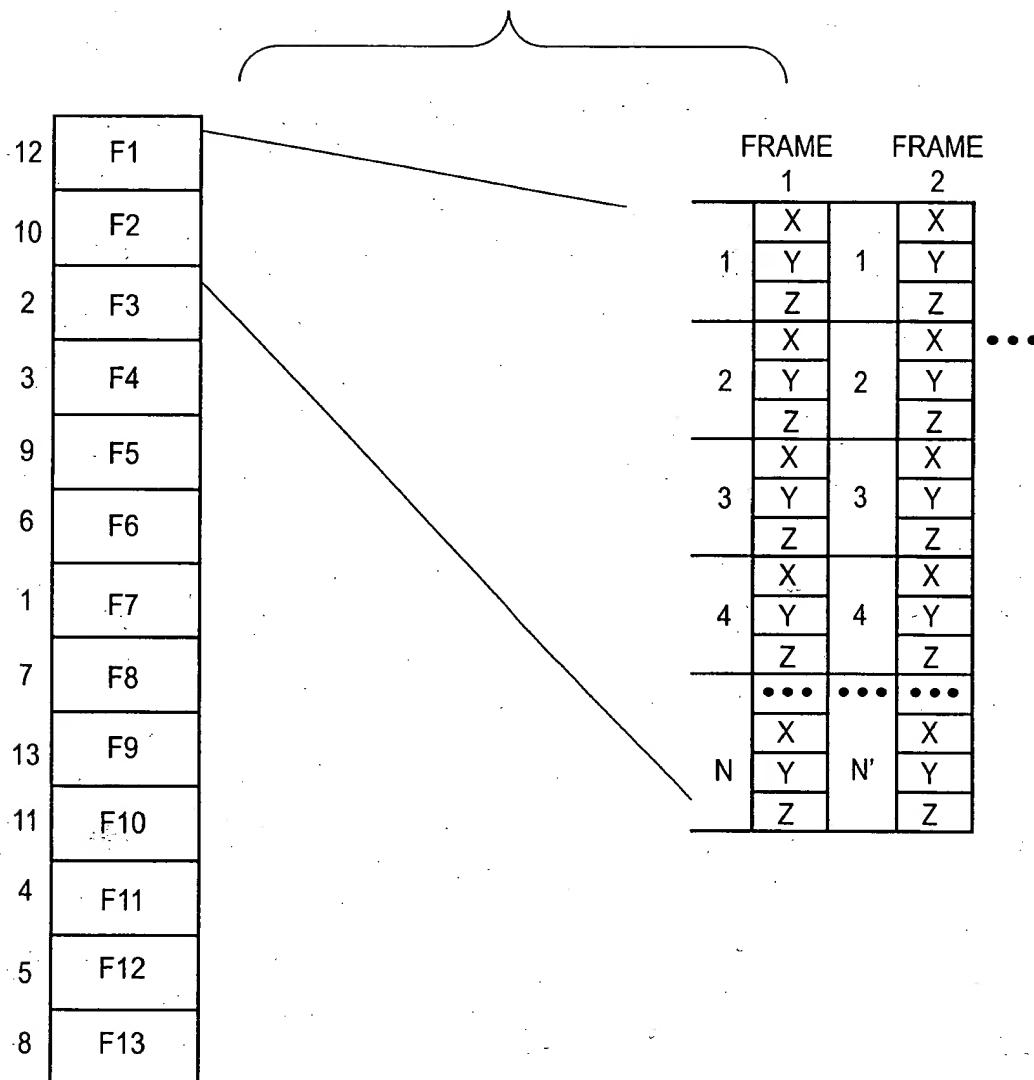


FIG. 50

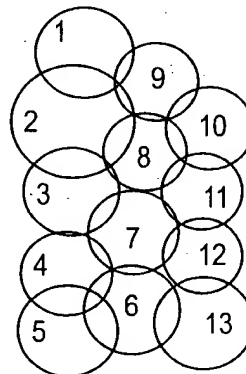


FIG. 51

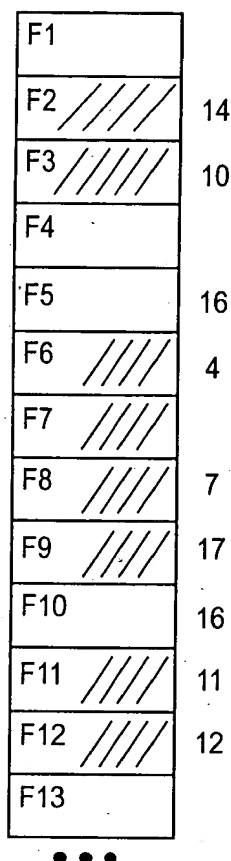


FIG. 52

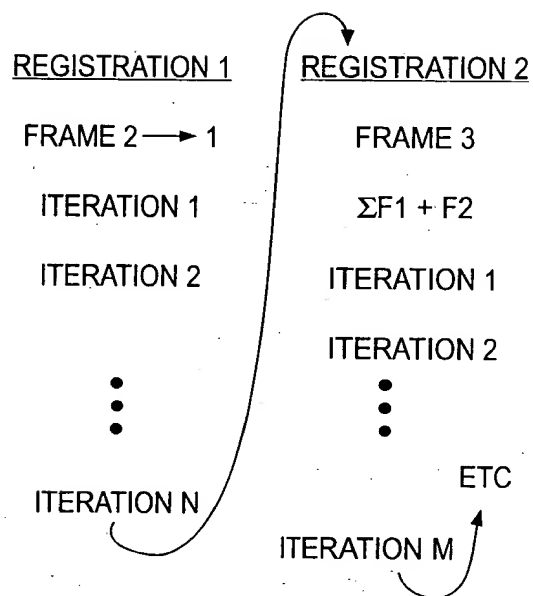


FIG. 53

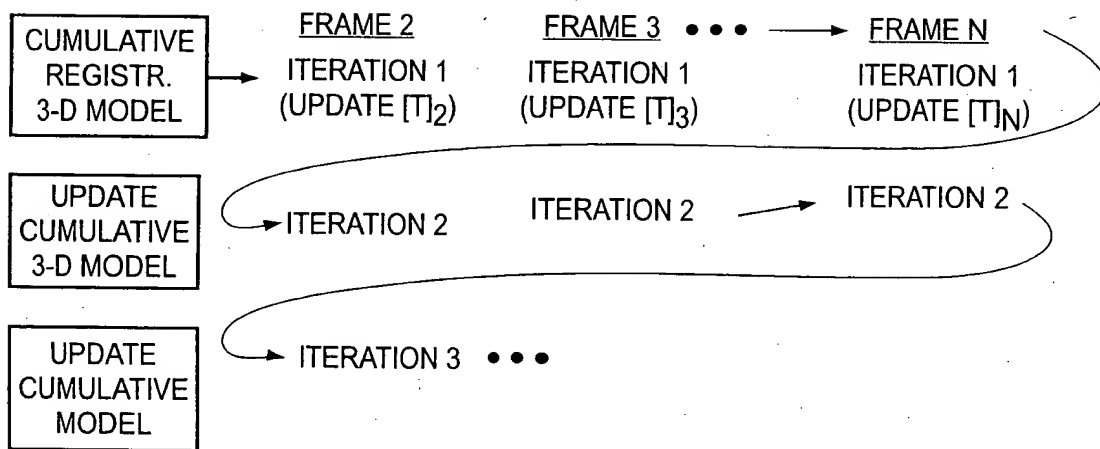


FIG. 54

☒ Single

☐ Cumulative

X	Y	Z
0.00	0.00	0.00
3.00	0.00	0.00
-3.00	0.00	0.00
0.00	3.00	0.00
0.00	-3.00	0.00

Registration (raw)

Distance limit (SYX)

Stationary count

Radius (SYX)

Convergence factor

Number of points to register

Accelerate factor

Registration (raw + fine)

Maximal iteration count

Overlap size

Minimum quote of active points (0..1)

Maximal triangle size (larger triangles are treated as gaps)

Maximal edge length (longer edges have no attraction)

Maximal count of unsuccessful files new segment is started when exceeded

Form factor: Proportion of point distance and element size (≥ 0)

Registration (line)

Distance limit (SYX)

Final distance

Stationary count

Radius (SYX)

Convergence factor

Number of points to register

Accelerate factor

general

Count of SYX surfaces for animation (0= off) Cell size

☒ Combine frames cumulative

☒ Combine segments cumulative

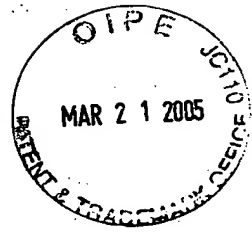
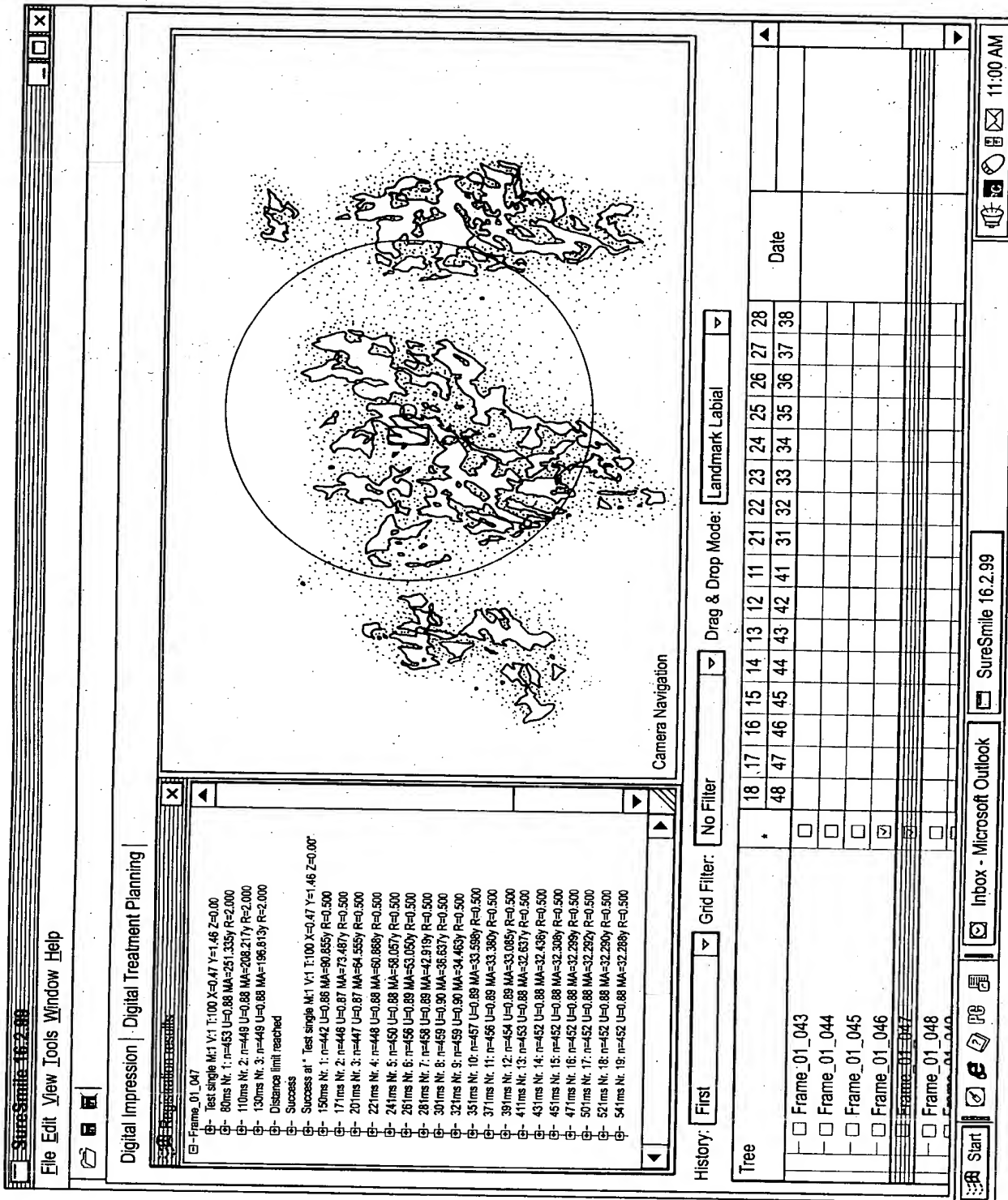
Merging

Radius of sphere inside which is to replace Minimal triangle plane size for closing gaps Minimal distance from point of base quantity

Maximal count of edge lines for closing gaps Maximal edge length for closing gaps Maximal distance from edge of base quantity



FIG. 55





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File Edit View Tools Window Help

SureSmile 16.2.99

Paint Shop Pro

Digital Impression | Digital Treatment Planning

Registration Results

901ms Nr. 24: n=381 U=0.85 MA=51.833y R=0.500

921ms Nr. 25: n=380 U=0.85 MA=46.213y R=0.500

941ms Nr. 26: n=378 U=0.85 MA=39.953y R=0.500

971ms Nr. 27: n=378 U=0.85 MA=38.429y R=0.500

991ms Nr. 28: n=377 U=0.85 MA=38.292y R=0.500

1011ms Nr. 29: n=377 U=0.85 MA=37.880y R=0.500

1031ms Nr. 30: n=377 U=0.85 MA=38.931y R=0.500

1051ms Nr. 31: n=379 U=0.85 MA=35.405y R=0.500

1081ms Nr. 32: n=379 U=0.85 MA=34.031y R=0.500

1102ms Nr. 33: n=379 U=0.85 MA=33.812y R=0.500

1122ms Nr. 34: n=378 U=0.85 MA=33.501y R=0.500

1142ms Nr. 35: n=378 U=0.85 MA=33.411y R=0.500

1162ms Nr. 36: n=378 U=0.85 MA=33.190y R=0.500

1192ms Nr. 37: n=378 U=0.85 MA=32.670y R=0.500

1212ms Nr. 38: n=378 U=0.85 MA=32.609y R=0.500

1222ms Nr. 39: n=378 U=0.85 MA=32.489y R=0.500

1252ms Nr. 40: n=378 U=0.85 MA=32.363y R=0.500

1272ms Nr. 41: n=378 U=0.85 MA=32.353y R=0.500

1302ms Nr. 42: n=378 U=0.85 MA=32.250y R=0.500

1322ms Nr. 43: n=379 U=0.85 MA=38.589y R=0.500

1342ms Nr. 44: n=379 U=0.85 MA=38.526y R=0.500

1362ms Nr. 45: n=378 U=0.85 MA=27.689y R=0.116

Final Distance limit reached

Camera Navigation

History: First Grid Filter: No Filter Drag & Drop Mode: Landmark Labial

	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28	Date
Digital Impression Scene Graph																	01/18/01 14:08:47
Segment_03																	01/18/01 14:08:47
Segment_05																	01/18/01 14:08:47
Segment_06																	01/18/01 14:08:47
Segment_07																	01/18/01 13:11:40
Upper jaw front (Segment_01)(189 Fram																	
Frame_01_001																	
Frame_01_002																	
Frame_01_003																	
Frame_01_004																	
Frame_01_005																	

Start

Inbox - Microsoft Outlook

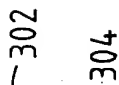
SureSmile 16.2.99

Paint Shop Pro

10:10 AM

FIG. 56

302.



LANDMARK LABEL

301UPPER JAW
FRONT (SEGMENT)

306



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Fig. 58A

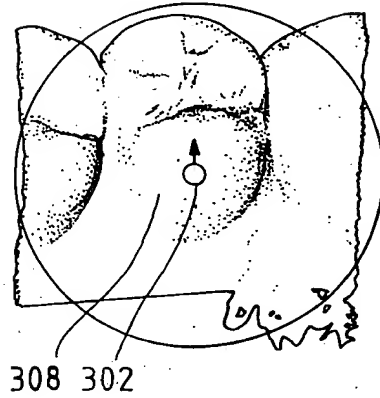


Fig. 58B

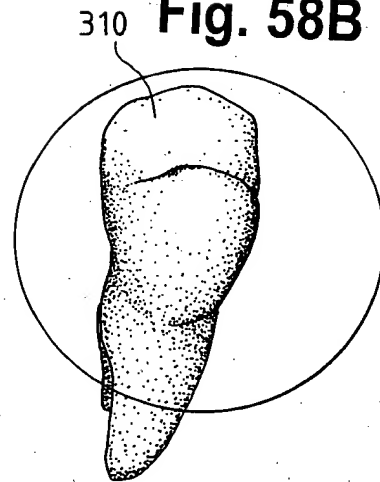


Fig. 58C

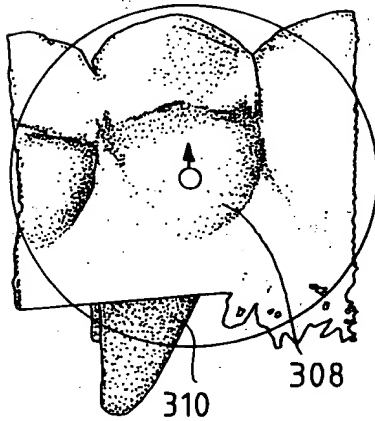


Fig. 58D

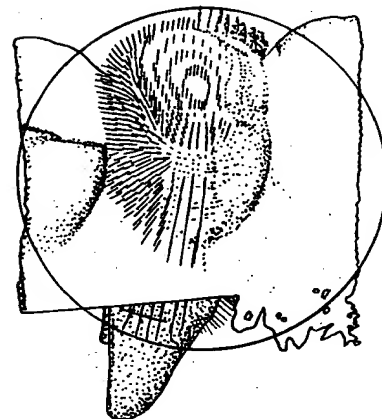


Fig. 58E

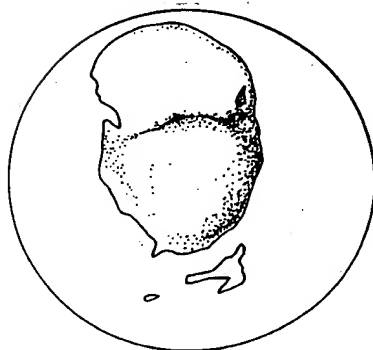


Fig. 58F

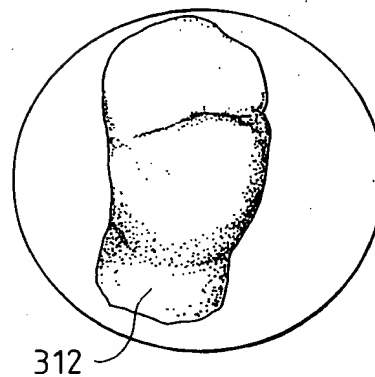
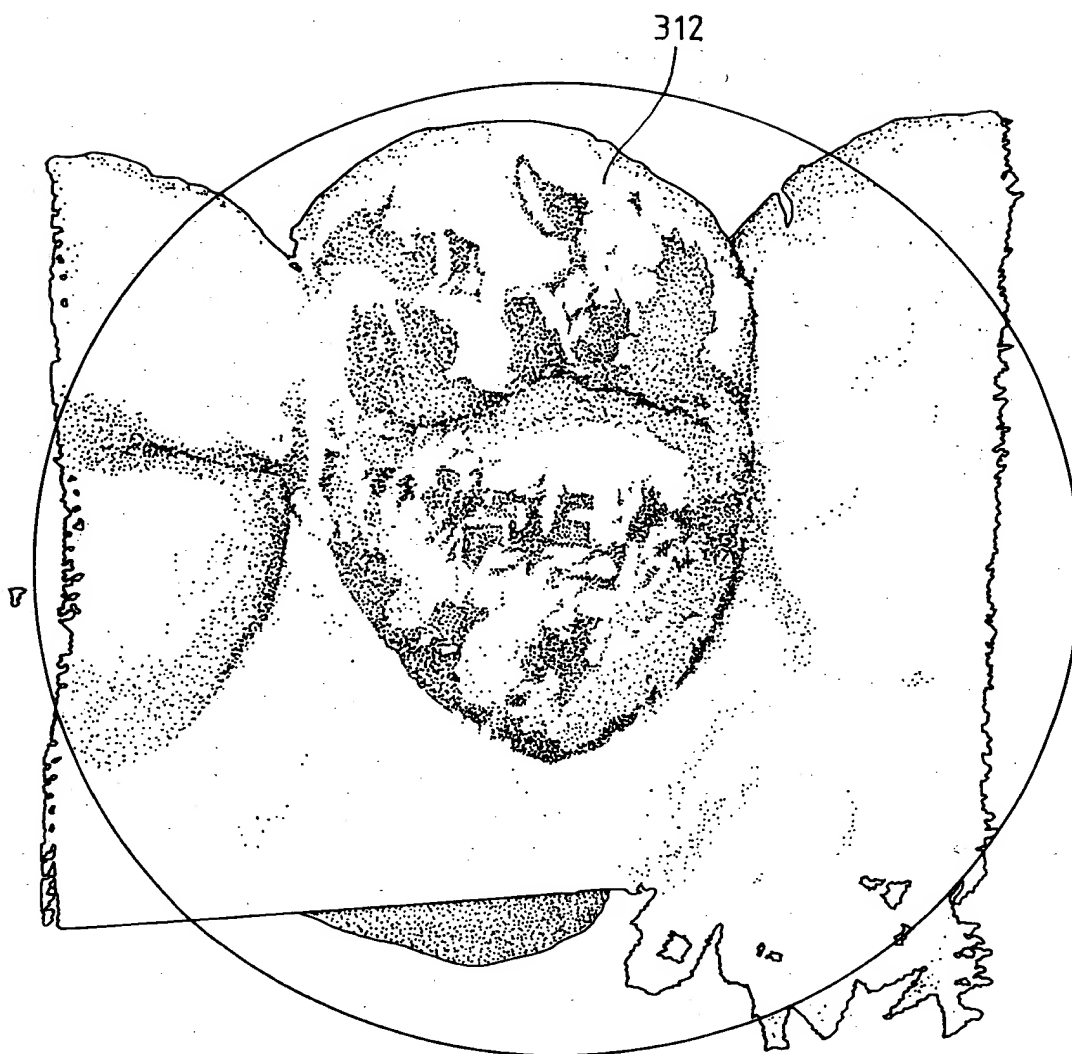


Fig. 59



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FIG. 61

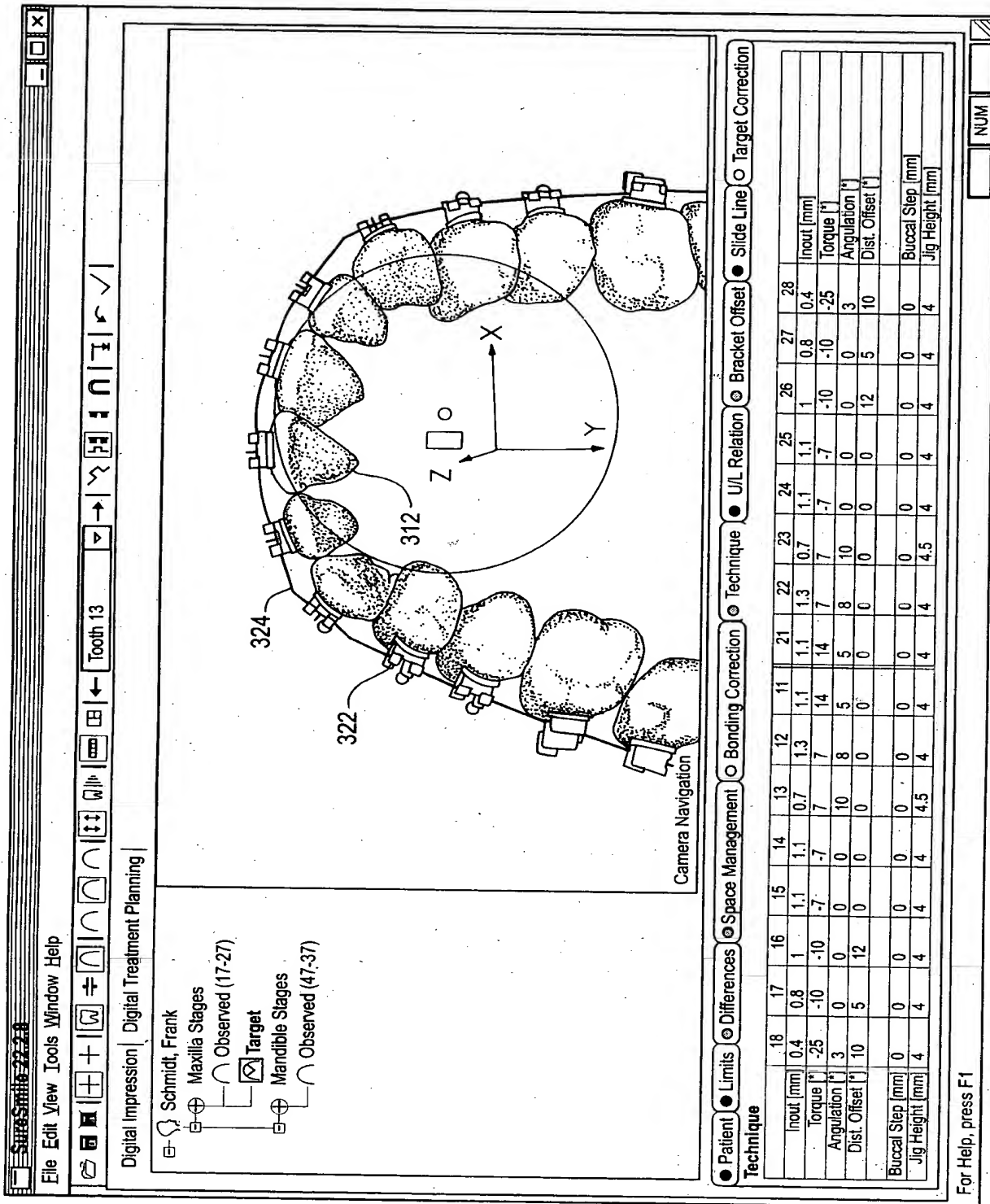


FIG. 62



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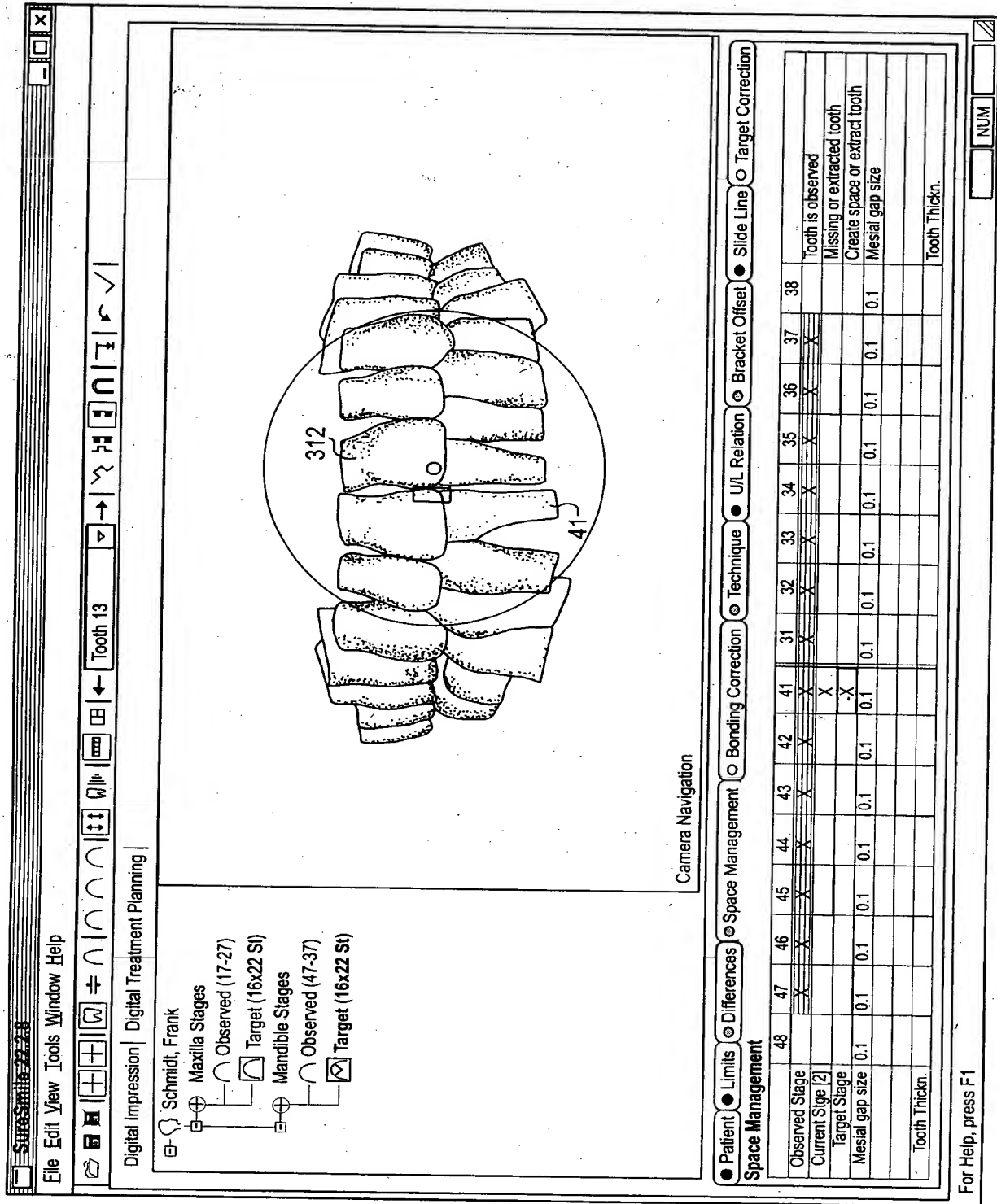
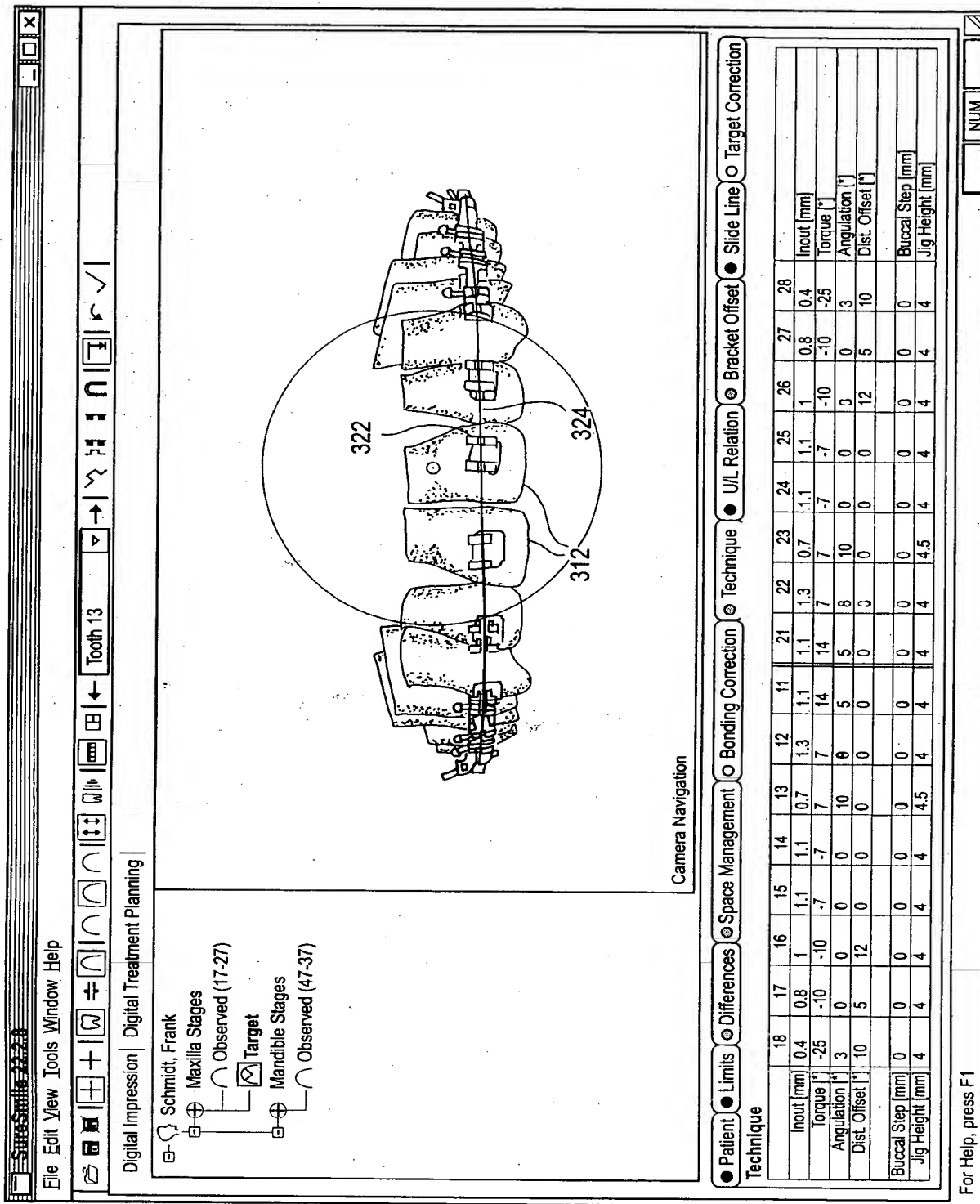
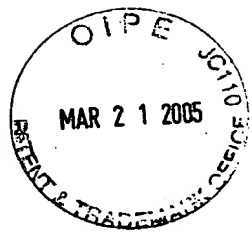


FIG. 63





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Fig. 64A

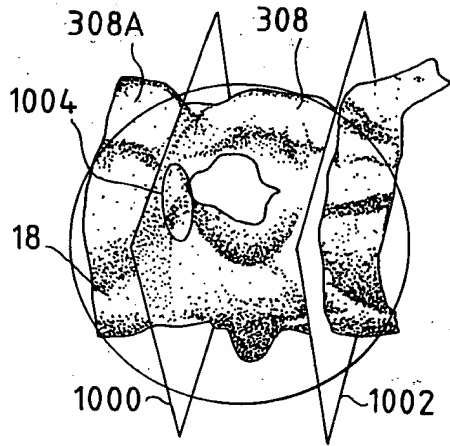


Fig. 64B

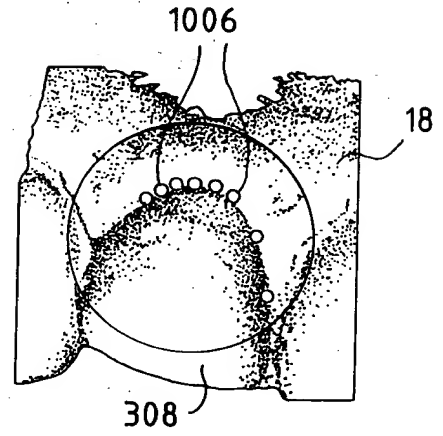


Fig. 64C

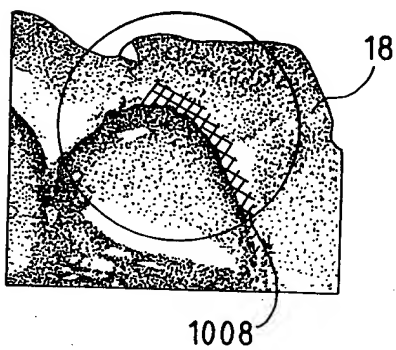
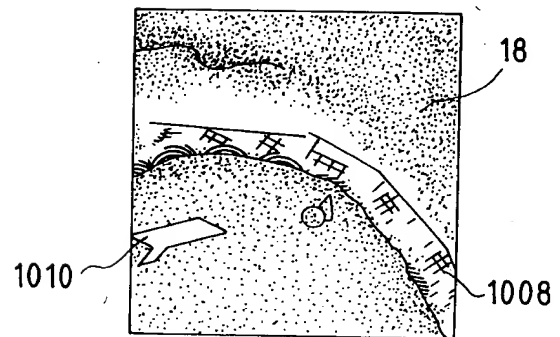


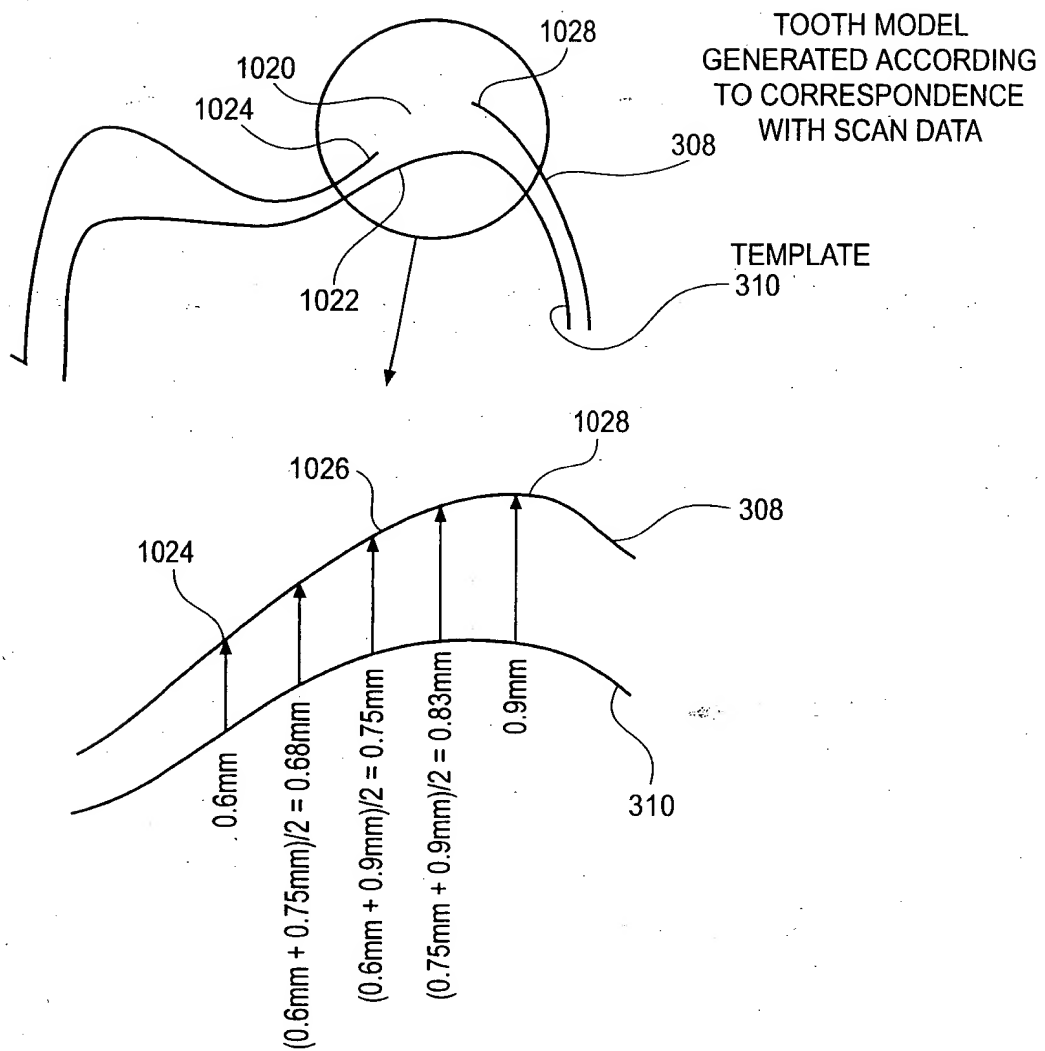
Fig. 64D





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FIG. 65



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